

Evaluation of vaccination rates with influenza vaccines in pregnant females and their attitudes towards these vaccines

 Süheyly Aydoğmuş,  Sümeyye Nur Ünsal Keser*,  Murat Gözüküçük,  Salih Cesur,  Yusuf Üstün

Department of Obstetrics and Gynecology, Ankara Training and Research Hospital, University of Health Sciences, Ankara, Türkiye

Cite this article: Aydoğmuş S, Ünsal Keser SN, Gözüküçük M, Cesur S, Üstün Y. Evaluation of vaccination rates with influenza vaccines in pregnant females and their attitudes towards these vaccines. *J Controv Obstetr Gynecol Ped.* 2026;4(4):90-95. doi:10.51271/JCOGP-0080

*Corresponding Author: Sümeyye Nur Ünsal Keser, sumeyyeunsal@gmail.com

Received: 22/05/2026

Accepted: 23/09/2026

Published: 28/10/2026

ABSTRACT

Aims: The primary aim of this study was to determine the seasonal influenza vaccination rate among pregnant females and to identify the main reasons for non-vaccination. The secondary aim was to describe pregnant females' perceptions regarding the protective effect of influenza vaccination and the sources of vaccine recommendation.

Methods: The study was conducted as a cross-sectional survey study on pregnant females aged 18-45 in the first, second, and third trimesters who applied to the Health Sciences University Ankara Training and Research Hospital Gynecology and Obstetrics Clinic between November 2023 and April 2024. The researchers reviewed the relevant literature and prepared a survey consisting of 19 questions to be administered to the participants.

Results: The mean age of the pregnant females included in the study was 25.66 ± 5.2 (18-42) years, and the mean gestational age was 26.02 ± 5.8 weeks (2-40 weeks). The influenza vaccination rate during the current pregnancy was 16.5% (66/400). Of the participants, 334 (83.5%) did not believe that the influenza vaccine was protective, whereas 66 (16.5%) believed that it was protective. The influenza vaccine had been recommended by a physician to 229 (57.3%) participants. Concern that the influenza vaccine might harm the baby was the most commonly reported reason for not receiving the vaccine.

Conclusion: The influenza vaccination rate among pregnant females in this study was low. A large proportion of participants did not believe that the influenza vaccine was protective, and concern that the vaccine might harm the baby was the most commonly reported reason for not being vaccinated. These findings highlight the need for healthcare professionals, particularly physicians providing antenatal care, to provide pregnant females with clear and evidence-based information regarding the benefits and safety of influenza vaccination.

Keywords: Influenza vaccines, pregnancy, surveys and questionnaires, health knowledge, attitudes, practice

INTRODUCTION

Influenza causes seasonal epidemics every year, and these epidemics have economic consequences and are responsible for deaths in risk groups. Influenza continues to be a current issue because pandemics and, occasionally, more severe seasonal epidemics caused by new mutations can result in mass deaths.¹ The best and most important way to protect against influenza is to receive an influenza vaccine every year. The World Health Organization (WHO) recommends that vulnerable populations, those who are at higher risk of serious health consequences of influenza than others; pregnant females, healthcare workers, people with chronic health problems (diabetes, human immunodeficiency virus (HIV), asthma, heart or lung disease, etc.), people over the age of 65, and children between the ages of 6 months and 5 years old, receive an influenza vaccine every year.²⁻⁵ Patients may refuse influenza vaccines and other vaccines for reasons such as not believing in the safety of the influenza vaccine, concerns about its effectiveness, personal beliefs, fear of

injections, and the possibility of getting sick due to the vaccine.⁶⁻⁸ Pregnant females represent an important target group for seasonal influenza vaccination because pregnancy is associated with an increased risk of severe influenza-related complications. Current recommendations from the Centers for Disease Control and Prevention (CDC) and the Advisory Committee on Immunization Practices (ACIP) recommend influenza vaccination for females who are or will be pregnant during the influenza season. An age-appropriate inactivated or recombinant influenza vaccine can be administered during any trimester of pregnancy. Despite these recommendations and the established maternal and neonatal benefits of vaccination, influenza vaccination coverage during pregnancy remains suboptimal worldwide. A recent systematic review including 78 studies on influenza vaccination during pregnancy reported that most studies (55/78) had vaccination coverage rates below 50%, with healthcare professional recommendation, maternal attitudes,



parity, and previous influenza vaccination among the important determinants of vaccine uptake.⁹

Vaccination coverage during pregnancy also remains an important concern in Türkiye. Recent data from Türkiye have demonstrated low influenza vaccination uptake among pregnant females, although reported rates vary considerably across study populations and settings. These findings indicate that maternal perceptions of vaccine safety and effectiveness and recommendations from healthcare professionals may play important roles in vaccine acceptance. However, local data regarding influenza vaccination uptake and the specific reasons underlying non-vaccination among pregnant females remain limited. Therefore, evaluating vaccination rates together with pregnant females's perceptions and reasons for vaccine refusal may help identify context-specific barriers to maternal influenza vaccination.

Many studies have shown that influenza vaccines are safe during pregnancy and have shown that the vaccine does not cause adverse outcomes such as spontaneous abortion, stillbirth or congenital anomalies.¹⁰ Many pregnant females refuse to be vaccinated against influenza, thinking that it may harm the fetus.

The primary aim of this study was to determine the seasonal influenza vaccination rate among pregnant females attending an obstetrics outpatient clinic and to identify the main reasons for non-vaccination. The secondary aim was to describe pregnant females's perceptions regarding the protective effect of influenza vaccination and the sources of vaccine recommendation. We hypothesized that influenza vaccination uptake among pregnant females would be low and that concerns regarding vaccine safety, particularly potential harm to the baby, would represent an important barrier to vaccination.

METHODS

This study was approved by the Ethics Committee for Clinical Research at the Ankara Training and Research Hospital of the University of Health Sciences (Date: 20.12.2023, Decision No: 1502/2023). All procedures were conducted in accordance with ethical guidelines and the principles of the Declaration of Helsinki.

The study was conducted as a cross-sectional survey study between November 2023 and April 2024 on pregnant females aged 18-45 in the first, second and third trimester who applied to the Health Sciences University Education and Research Hospital Gynecology and Obstetrics Polyclinic.

A total of 463 pregnant females were assessed for participation during the study period. Of these, 62 declined to participate. One additional participant was excluded because she did not meet the eligibility criteria and did not complete the questionnaire. Consequently, 400 pregnant females were included in the final analysis, corresponding to a participation rate of 86.4%. All questionnaires included in the final analysis were complete, and there were no missing data for the variables analyzed.

Pregnant females aged 18–45 years who were in any trimester of pregnancy, attended the obstetrics outpatient clinic during the study period, were able to communicate effectively and understand the questionnaire, and voluntarily agreed to participate in the study were eligible for inclusion. Pregnant females with multiple pregnancies or high-risk pregnancies were excluded from the study. Females who were not pregnant, those who were unable to communicate effectively or complete the questionnaire, and those who declined to participate were also excluded. The original questionnaire included items on educational level, income level, employment status, gravidity, parity, and previous pregnancy history; however, individual-level records for educational level, income level, gravidity, and parity were not retained in the final analysis dataset and were therefore unavailable for comparative analyses. The variables available for the present analysis included age, gestational week, smoking status, and the presence of additional medical conditions. Influenza vaccination history, including previous influenza vaccination, was also assessed. In addition, participants were asked about their perceptions regarding the protective effect of the influenza vaccine, the source of vaccine recommendation, influenza vaccination during the current pregnancy, and reasons for non-vaccination.

The survey asked about the pregnant females's ages, gestational weeks, smoking status –if any–, and additional diseases (diabetes, hypertension, heart failure, chronic kidney disease, immunosuppression, chronic bronchitis or emphysema, chronic liver disease, other diseases, etc.). In addition, participants were asked whether they believed the influenza vaccine was protective, who recommended the influenza vaccine (family doctor, nurse, pharmacist, other), whether they had received the influenza vaccine during the current pregnancy, and, if not, the reason for non-vaccination (not knowing that they should receive the vaccine, thinking it would harm the baby, not being recommended by their doctor, not thinking it would be beneficial, thinking the appropriate time had passed, fear of side effects, being unable to obtain it, not knowing that it was free, negative news about the vaccine in the press, fear of needles). It was stated that more than one response option could be selected.

Statistical Analysis

An a priori power analysis was performed using G*Power software to determine the required sample size before participant recruitment. The sample size calculation was based on the anticipated effect size, with a statistical power of 90% and a type I error (α) of 0.005. The minimum required sample size was calculated as 400 participants. Accordingly, 400 pregnant females were included in the study.

Statistical analyses were performed using SPSS version 24.0. Descriptive data were presented as mean $\pm$ standard deviation, median (interquartile range), or number and percentage, as appropriate. The distribution of continuous variables was assessed before comparative analyses. Because age and gestational week were not normally distributed between vaccination groups, comparisons were performed using the Mann–Whitney U test. Categorical variables were compared using the Chi-square test or Fisher's exact test, as appropriate. A p value < 0.05 was considered statistically significant.

RESULTS

Of the 463 pregnant females assessed for participation, 400 were included in the final analysis, corresponding to a participation rate of 86.4%.

Four hundred pregnant females aged 18-45 years in the first, second and third trimesters who applied to the Health Sciences University Ankara Education and Research Hospital Gynecology and Obstetrics Polyclinic between November 2023 and April 2024 were included in the study. Data are shown in **Table 1**.

Table 1. Demographic data and obstetric characteristics of the participants

Demographic data	Mean±SD (min-max) or n (%)
Age	25.66±5.2 (18-42)
Pregnancy week	26.02±5.8 (2-40)
Smoking	
No	300 (75)
Yes	100 (25)
Duration of smoking (years)	4.75±3 (1-10)
Additional disease	
No	393 (98.3)
Yes	7 (1.8)
Diabetes	7 (1.8)
Hypertension	0 (0)
Heart failure	0 (0)
Chronic renal failure	0 (0)
Immunosuppression	0 (0)
COPD	0 (0)
Chronic liver diseases	0 (0)
Other	0 (0)

SD: Standard deviation, min: Minimum, max: Maximum, COPD: Chronic obstructive pulmonary disease

The mean age of the participants was 25.66±5.2 years, and the mean gestational age was 26.02±5.8 weeks. While 300 (75%) of the participants were non-smokers, 100 (25%) were smokers. 393 (98.3%) of the participants did not have any chronic disease. 7 (1.8%) of the participants had diabetes mellitus as an additional chronic disease. The participants did not have chronic diseases such as hypertension, heart failure, chronic renal failure, immunosuppressive disease, and chronic obstructive pulmonary disease.

The study sample, which consisted mostly of pregnant females under the age of 30, was questioned about their views on the effectiveness of the influenza vaccine, who recommended the influenza vaccine during pregnancy, and the reasons for not getting the influenza vaccine during pregnancy. The data obtained are shown in **Table 2**. Of the participants, 334 (83.5%) did not believe that the influenza vaccine was protective, whereas 66 (16.5%) believed that it was protective.

Among these participants, those who did not believe that the influenza vaccine was protective had not been vaccinated. A doctor had recommended the influenza vaccine to 229 (57.3%) of the participants. The reasons for not receiving the influenza vaccine were 29 (7.3%) not knowing that the

Table 2. Participants' responses to questions about influenza vaccination

Do you believe that the influenza vaccine protects against influenza?	
No	334 (83.5)
Yes	66 (16.5)
Who recommended the influenza vaccine?	
Doctor	229 (57.3)
Other (friends, socialmedia, etc.)	171 (42.8)
Have you had an influenza vaccination this year?	
No	334 (83.5)
Yes	66 (16.5)
Did you receive an influenza vaccination last year?	
No	334 (83.5)
Yes	66 (16.5)
What is your reason for not receiving an influenza vaccination?	
I didn't know I needed to be vaccinated.	29 (7.3)
Because I think it will harm the baby.	121 (30.3)
Because I think the appropriate time has passed.	62 (15.5)
Because I'm afraid of the side effects.	81 (20.3)
Because I cannot obtain it.	11 (2.8)
Because I didn't know it was free.	66 (16.5)
Duetonegative news about the vaccine in the press	30 (7.5)

vaccine should be administered, 121 (30.3) thinking that it would be harmful to the baby, 62 (15.5) thinking that the appropriate time had passed, 81 (20.3) fearing its side effects, 11 (2.8) being unable to obtain it, 66 (16.5) not knowing that it was free, and 30 (7.5%) not getting it due to negative news about the vaccine in the press.

Comparative analyses were performed according to influenza vaccination status. There were no statistically significant differences between vaccinated and unvaccinated participants in terms of age, gestational week, trimester, smoking status, presence of additional disease, or whether the vaccine was recommended by a physician (all $p>0.05$). In contrast, belief that the influenza vaccine was protective and influenza vaccination in the previous year were significantly associated with current influenza vaccination status (both $p<0.001$) (**Table 3**).

DISCUSSION

It is very important to be vaccinated against influenza, which can cause serious disease during pregnancy, before, during, or after pregnancy. Pregnant females are more prone to influenza infection and influenza-related morbidity. Influenza infection may require hospitalization and admission to the intensive care unit.¹¹ For this reason, the WHO and the American College of Obstetricians and Gynecologists (ACOG) recommend that all pregnant females and those planning a pregnancy be vaccinated during the influenza season.¹² Licensed inactivated influenza vaccines can be used safely during pregnancy.

Influenza vaccination is recommended for pregnant females, regardless of trimester.¹³ Maternal influenza vaccination is an essential part of antenatal care for both the mother and the newborn. Pregnant females are at increased risk of

Table 3. Comparison of demographic and clinical characteristics according to influenza vaccination status

Variable	Vaccinated (n=66)	Unvaccinated (n=334)	p value
Age, years, median (Q1–Q3)	25.0 (22.25–29.75)	25.0 (21.0–30.0)	0.263
Gestational week, median (Q1–Q3)	27.0 (22.0–28.0)	27.0 (22.0–29.75)	0.796
Trimester, n (%)			0.887
First trimester	1 (1.5)	8 (2.4)	
Second trimester	39 (59.1)	191 (57.2)	
Third trimester	26 (39.4)	135 (40.4)	
Smoking, n (%)	17 (25.8)	83 (24.9)	0.877
Presence of additional disease, n (%)	0 (0.0)	7 (2.1)	0.606*
Belief that influenza vaccine is protective, n (%)	66 (100.0)	0 (0.0)	<0.001*
Vaccine recommended by a physician, n (%)	36 (54.5)	193 (57.8)	0.683
Influenza vaccination in the previous year, n (%)	66 (100.0)	0 (0.0)	<0.001*

Data are presented as median (Q1–Q3) or n (%), as appropriate. Continuous variables were compared using the Mann–Whitney U test, and categorical variables were compared using the Chi-square test or Fisher's exact test, as appropriate. *Fisher's exact test.

admission to intensive care units, preterm labor and maternal death, which are serious complications of influenza.¹¹ Therefore, all obstetricians and gynecologists should inform and raise awareness of the pregnant females they follow about the benefits and safety of influenza vaccination. Both the pregnant female and the fetus benefit from influenza vaccination through maternal passive immunization.¹²

The influenza vaccine is safe during pregnancy and has a well-established safety profile for both the mother and the fetus. Pregnant females are at a higher risk of influenza-related hospitalization, especially during the second and third trimesters. Influenza-related hospitalization rates are also high in newborns, especially those under 6 months of age, and children aged 0–4. The primary reason for administering the influenza vaccine to pregnant females is to protect them from influenza. Vaccination also protects infants under 6 months of age against influenza and influenza-related complications throughout the influenza season.¹³

In the present study, the influenza vaccination rate among pregnant females was only 16.5%, indicating that vaccine uptake remained low despite the established recommendations for influenza vaccination during pregnancy. This finding is consistent with previous studies from Türkiye reporting low levels of influenza vaccination among pregnant females. The low vaccination rate observed in our study is likely to reflect multiple interacting factors rather than a single barrier. In particular, limited confidence in vaccine effectiveness, concerns regarding vaccine safety, insufficient knowledge about the benefits of vaccination during pregnancy, and the influence of healthcare professional recommendations have previously been identified as important determinants of maternal influenza vaccine acceptance. Our findings further support the importance of maternal perceptions, as belief in the protective effect of the influenza vaccine was significantly associated with current vaccination status ($p < 0.001$).

Another important finding of the present study was that 30.3% of participants reported concern that influenza vaccination might harm the baby, making this the most frequently reported reason for non-vaccination. Similar concerns have been reported among pregnant females in Türkiye and internationally, suggesting that perceived fetal risk remains an important barrier to maternal influenza vaccination. This concern appears to contrast with the available evidence regarding vaccine safety during pregnancy, as systematic evaluations have not demonstrated an increased risk of major adverse pregnancy or birth outcomes following seasonal influenza vaccination. Therefore, the low vaccination rate observed in our population may partly reflect a discrepancy between the available scientific evidence regarding vaccine safety and pregnant females's perceptions of fetal risk. Addressing this discrepancy through clear and consistent risk-benefit communication during routine antenatal care may be important for improving informed vaccine decision-making.

Clinical and observational studies, have consistently demonstrated the safety of influenza vaccination. Seasonal influenza vaccination of pregnant females and adults is similar in terms of effectiveness.¹² Although the effectiveness of influenza vaccination may be lower than that of some other adult vaccines, vaccination provides significant protection against influenza. The newborns of vaccinated pregnant females also benefit from this vaccine. Four large-scale randomized controlled trials and numerous observational studies, have shown that maternal influenza vaccination provides protection in newborns.

Influenza vaccination during pregnancy provides two benefits, protecting both the mother and the baby from influenza. However, vaccination rates during pregnancy are low in many countries, including Türkiye. Vaccine hesitancy, as defined by the WHO, has been identified as a threat to global health. Studies on tetanus, influenza, and pertussis vaccines in pregnant females in high-income countries have identified low vaccination rates as a result of a lack of healthcare personnel's recommendation of the vaccine, concerns about pregnant females' safety, and access restrictions.^{14–16} In our study, the most common reason for pregnant females not receiving the influenza vaccine was safety concerns, followed by fear of side effects and lack of knowledge that it was free.

The biggest reason why pregnant females or females planning to get pregnant do not accept vaccination is the lack of information about the benefits of influenza vaccination. Therefore, the adverse effects of influenza and the benefits of vaccination should be clearly explained to patients.

A retrospective analysis conducted in the United States, it was reported that 14,168 (40.6%) of 4,919 pregnant females received an influenza vaccination during pregnancy. This study reported a positive and statistically significant association between receiving an influenza vaccination during pregnancy and infant influenza vaccination when the infants became eligible.¹⁷

It has been reported that, in a patient cohort of 4 million, influenza vaccination could save \$3.7 billion annually, is cost-

effective, and can reduce morbidity and mortality in mothers and babies. Therefore, healthcare professionals are advised to strongly recommend influenza vaccinations to pregnant females every year.¹⁸

A study conducted in South Korea conducted a survey examining pregnant females' influenza vaccination history, general attitudes toward the influenza vaccine, and factors influencing their decisions about influenza vaccination. The study found a 37.3% rate of influenza vaccination during pregnancy. Factors positively associated with influenza vaccination were reported as perceived risk of influenza infection, recommendations from healthcare professionals, and confidence in the effectiveness of the vaccine. The most common reasons for not being vaccinated were reported as concerns about harmful effects and lack of recommendations from healthcare professionals. The study reported that the rate of influenza vaccination among pregnant females was much lower than the general population.¹⁹

Consequently, providing accurate information about the influenza vaccine, recommending the influenza vaccine to pregnant females, and encouraging pregnant females to get vaccinated as part of a health policy were reported as important.^{20,21}

In a study conducted in Türkiye among 353 pregnant females, 191 (54.1%) reported accepting the influenza vaccine. No statistically significant differences were found between the groups in terms of maternal age, body mass index, gravida, number of children, socioeconomic status, smoking status, or occupation. Vaccination rates for females in their third trimester were lower than those in their first and second trimesters (35.7% and 67.7% vs. 64.2%, respectively). Vaccination rates were also lower among females with at least a university degree. While 82.2% of females who accepted the vaccine stated that the vaccine was beneficial to their baby, this rate was reported as 55% in the unvaccinated group. The most common reason for refusal was the belief that influenza is not a serious illness. Vaccination rates were particularly high among pregnant females who believed the influenza vaccine was beneficial to their baby. In this study, females who had sufficient knowledge, had a low level of education, had a previous influenza infection, and decided to vaccinate their babies were reported to be more likely to receive the influenza vaccine.^{22,23}

Limitations

The present study has several limitations. First, this was a single-center study conducted among pregnant females attending one obstetrics outpatient clinic; therefore, the findings may not be generalizable to all pregnant females in Türkiye or to populations with different sociodemographic and healthcare characteristics. Second, the cross-sectional design allows the identification of associations but does not permit conclusions regarding causal relationships between participants' perceptions and influenza vaccination behavior. Third, because the questionnaire was administered face-to-face, responses concerning vaccination attitudes and behaviors may have been influenced by social desirability or recall bias. Finally, although the questionnaire underwent content evaluation, pilot testing, and reliability assessment before its use, it was specifically developed for the present

study, which should be considered when comparing our findings with studies using different or standardized instruments. Multicenter studies involving larger and more diverse populations may provide further evidence regarding the determinants of influenza vaccination during pregnancy.

Another limitation of the present study is that, although educational level, income level, gravidity, and parity were included as items in the original questionnaire, the corresponding individual-level records were not retained in the final analysis dataset. Consequently, these variables were unavailable for additional comparative analyses between vaccinated and unvaccinated participants, and their potential associations with influenza vaccine uptake could not be evaluated.

CONCLUSION

As a result, the influenza vaccination rate among pregnant females in our study was low, with only 16.5% of participants reporting vaccination. Most participants did not believe that the influenza vaccine was protective, and concern about potential harm to the baby was the most frequently reported reason for not being vaccinated. These findings suggest that misconceptions regarding the safety and effectiveness of influenza vaccination remain important barriers to vaccination during pregnancy. Healthcare professionals involved in antenatal care should provide clear, evidence-based information about influenza vaccination and actively address pregnant females' concerns regarding vaccine safety.

ETHICAL DECLARATIONS

Ethics Committee Approval

This study was approved by the Ethics Committee for Clinical Research at the Ankara Training and Research Hospital of the University of Health Sciences (Date: 20.12.2023, Decision No: 1502/2023).

Informed Consent

Written informed consent was obtained from all individual participants prior to their inclusion in the study. Participants were fully informed about the study's aims, procedures, potential risks and benefits, and their rights—including the right to withdraw at any time without consequence. All participants voluntarily signed a written informed consent form.

Peer Review Process

This manuscript was subject to external peer review.

Conflict of Interest

The authors declare no conflicts of interest related to this study.

Financial Disclosure

The authors received no financial support for the conduct or publication of this research.

Author Contributions

Concept: SA; Design: SA; Data Collection and/or Processing: SNÜK; Analysis and/or Interpretation: SC; Literature Review: MG; Writing the Article: YÜ, SC; Critical Review: SA, SNÜK.

REFERENCES

1. Erişkin Bağışıklama Rehberi. <https://www.ekmud.org.tr/haber/264-turkiye-ekmud-eriskinbagisiklama-rehberi>, Erişim Tarihi: 25 Mart 2021.
2. Evaluation of influenza vaccine effectiveness: a guide to the design and interpretation of observational studies. Geneva: World Health Organization. 2017. <https://apps.who.int/iris/handle/10665/255203>, Erişim Tarihi: 25 Mart 2021.
3. Seyahat Sağlığı 2021. <https://www.seyahatsagligi.gov.tr/site/HastalikDetay/Grip>, Accessed March 25, 2021.
4. Background paper on influenza vaccine and immunization. 2013, 1–48. http://www.who.int/immunization/sage/meetings/2012/april/1_Background_Paper_Mar26_v13_cleaned.pdf?ua=1, Erişim Tarihi: 10 Mart 2021.
5. Grohskopf LA, Alyanak E, Broder KR, et al. Prevention and control of seasonal influenza with vaccines: recommendations of the Advisory Committee on Immunization Practices-United States, 2020-21 influenza season. *MMWR Recomm Rep*. 2020;69(8):1-24. doi:10.15585/mmwr.rr6908a1
6. Sarı T, Temocin F, Köse H. Sağlık çalışanlarının influenza aşısına yaklaşımları. *KlinikDerg*. 2017;30(2):59-63. doi:10.5152/kd.2017.15
7. Galanakis E, Jansen A, Lopalco PL, Giesecke J. Ethics of mandatory vaccination for healthcare workers. *Euro Surveill*. 2013;18(45):20627. doi:10.2807/1560-7917.es2013.18.45.20627
8. Queipo-Herías Y, Sánchez-Zaballos M, Zuazua-Rico D, Mosteiro-Díaz MP, Maestro-Gonzalez A. Health professionals' attitudes against influenza vaccination in a Spanish tertiary hospital. *Rev Esp Salud Publica* 2019; 93. pii: e201908057.
9. Maltezou PG, Papakonstantinou ME, Kourkouni E, et al. Influenza and pertussis vaccination during pregnancy: a systematic review of vaccination rates and vaccination determinants. *Vaccines (Basel)*. 2026; 14(4):325. doi:10.3390/vaccines14040325.
10. Fell DB, Platt RW, Lanes A, et al. Fetal death and preterm birth associated with maternal influenza vaccination: systematic review. *BJOG*. 2015;122(1):17-26. doi:10.1111/1471-0528.12977
11. Influenza in pregnancy: prevention and treatment: ACOG committee statement no. 7. *Obstet Gynecol*. 2024;143(2):e24-e30. doi:10.1097/AOG.00000000000005479
12. Influenza Vaccination During Pregnancy. ACOG Committee Opinion Number 732. *ObstetGynecol*. 2018;131:109-14.
13. Anselem O, Parat S, Théau A, et al. Vaccinations et grossesse. *Presse Med*. 2014;43(6):715-721. doi:10.1016/j.lpm.2014.04.003
14. Tamma PD, Ault KA, del Rio C, Steinhoff MC, Halsey NA, Omer SB. Safety of influenza vaccination during pregnancy. *Am J Obstet Gynecol*. 2009;201(6):547-552. doi:10.1016/j.ajog.2009.09.034
15. Olson SM, Sahni LC, Boom JA, Dawood FS, Muñoz FM, Ellington SR. Timing of influenza vaccination during pregnancy. *Am J Obstet Gynecol MFM*. 2024;6(8):101427. doi:10.1016/j.ajogmf.2024.101427
16. Castillo E, Patey A, MacDonald N. Vaccination in pregnancy: challenges and evidence-based solutions. *Best Pract Res Clin Obstet Gynaecol*. 2021;76:83-95. doi:10.1016/j.bpobgyn.2021.03.008
17. Zhou F, Lindley MC, Lee JT, Jatlaoui TC. Association between influenza vaccination during pregnancy and infant influenza vaccination. *Obstet Gynecol*. 2023;141(3):563-569. doi:10.1097/AOG.0000000000005101
18. Chaiken SR, Hersh AR, Zimmermann MS, Ameel BM, Layoun VR, Caughey AB. Cost-effectiveness of influenza vaccination during pregnancy. *J Matern Fetal Neonatal Med*. 2022;35(25):5244-5252. doi:10.1080/14767058.2021.1876654
19. Jung EJ, Noh JY, Choi WS, et al. Perceptions of influenza vaccination during pregnancy in Korean women of childbearing age. *Hum Vaccin Immunother*. 2016;12(8):1997-2002. doi:10.1080/21645515.2015.1119347
20. Orgul G, Keles AI, Yucel A, Sahin D. The rate of influenza vaccination after face-to-face interview in pregnancy. *Z Geburtshilfe Neonatol*. 2021; 225(5):423-427. doi:10.1055/a-1332-2623
21. Moro PL, Broder K, Zheteyeva Y, et al. Adverse events in pregnant women following administration of trivalent inactivated influenza vaccine and live attenuated influenza vaccine in the Vaccine Adverse Event Reporting System, 1990-2009. *Am J Obstet Gynecol*. 2011; 204(2):146.e1-146.e1467. doi:10.1016/j.ajog.2010.08.050
22. Madhi SA, Cutland CL, Kuwanda L, et al. Influenza vaccination of pregnant women and protection of their infants. *N Engl J Med*. 2014; 371(10):918-931. doi:10.1056/NEJMoa1401480
23. Stark LM, Power ML, Turrentine M, et al. Influenza vaccination among pregnant women: patient beliefs and medical provider practices. *Infect Dis Obstet Gynecol*. 2016;2016:3281975. doi:10.1155/2016/3281975

Süheyla Aydoğmuş

Associate Professor, is an obstetrician and gynecologist at the Department of Obstetrics and Gynecology, Ankara Training and Research Hospital, University of Health Sciences, Ankara, Türkiye. She graduated from Erciyes University Faculty of Medicine and has extensive clinical and academic experience in obstetrics and gynecology. Her academic work covers a broad range of topics in women's health, including pregnancy, gynecological disorders, contraception, reproductive health, and preventive healthcare. She has contributed to numerous scientific studies, presentations, and academic activities throughout her professional career.

