

Influenza Vaccine and Tetanus, Diphtheria, and Acellular Pertussis Vaccine among Pregnant Women: A Comprehensive Survey About the Attitudes and Practices of Obstetrician and Gynecologists

Seda Topcu^{1*}, Ashi Oskovi², Hasan Onur Topçu² and Betül Ulukol¹

¹Department of Pediatrics, Division of Social Pediatrics, Ankara University, School of Medicine, Turkey

²Dr. Zekai Tahir Burak Women Training and Research Center University of Health Sciences, Turkey

***Corresponding Author:** Seda Topçu, Department of Pediatrics, Division of Social Pediatrics, Ankara University, School of Medicine, Turkey.

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Abstract

Aim: To compare the attitudes and knowledges of the residents and specialists in obstetrics and gynecology (O&G) about influenza vaccine and tetanus, diphtheria, and acellular pertussis (Tdap) vaccine and tetanus, diphtheria vaccine (Td) among pregnant women.

Material and Methods: A total of 103 participants; 64 residents in O&G and 39 specialists in O&G were invited to complete a self-administered survey about their attitudes and practices of influenza vaccine, Tdap vaccine and Td vaccine among pregnant women.

Results: A favorable attitude towards vaccination of Influenza was expressed by 60 residents (93.8%) and 36 specialists (92.3%) ($p = 1$), however only 30 residents (46.9%) and 24 specialists (61.5%); ($p = 0.148$) reported routinely recommending influenza vaccine to pregnant women in their current practice. A favorable attitude towards vaccination of Tdap was expressed by 36 residents (56.3%) and 19 specialists (48.7%) ($p = 0.457$), however only 27 residents (42.2%) and 17 specialists (43.6%); ($p = 0.889$) reported routinely recommending Tdap vaccine to pregnant women in their current practice. A favorable attitude towards vaccination of Td was expressed by 52 residents (81.3%) and 37 specialists (94.9%) ($p = 0.457$), however only 45 residents (70.3%) and 30 specialists (76.9%); ($p = 0.465$) reported routinely recommending Td vaccine to pregnant women in their current practice.

Conclusion: Both residents and specialists in O&G were found in similar awareness to recommend influenza vaccine and tetanus, diphtheria, and acellular pertussis vaccine among pregnant women. However; in their current practices, recommending those vaccines were found lower. Adding those vaccines to the national vaccine program may lead the increasing in the recommendation of those vaccines in routine practice.

Keywords: Influenza; Vaccine; Tetanus; Diphtheria; Acellular Pertussis; Pregnancy

Introduction

Vaccination during pregnancy is advocated for both maternal and for neonatal immunization. Lacking of knowledge about safety of vaccination during pregnancy, concerns on potential harms for the fetus and campaigns of anti-vaccination movements causes a negative attitude on pregnant women and lead them to avoid from vaccination. Seasonal influenza is one of the most common infections which may lead to more severe complications during pregnancy and it can be prevented by vaccination [1]. Vaccination of pregnant also protects the newborns in first months of their life as it is known vaccination of infants is not recommended first 6 months [2]. Tetanus, diphtheria, and acellular pertussis vaccine (Tdap) protects the newborn from pertussis by providing passive neonatal immunization with maternal antibodies transferred to fetus across the placenta [3]. Neonatal tetanus is a significant public health care problem especially in developing countries. In 2015, approximately 34.000 neonatal deaths occurred because of neonatal tetanus [4]. Mothers, who are not immunized for

tetanus with appropriate doses are recommended to be vaccinated during pregnancy according to Maternal Neonatal Tetanus Elimination (MNTE) goals [5]. Despite being recommended by many guidelines and organizations like World Health Organization (WHO), Advisory Committee on Immunization Practices (ACIP) – Centers for Disease Control and Prevention (CDC) vaccination rates are still low both in developed and developing countries [6-9]. There are many different written and online sources and media for to reach for information recently for pregnant women. However, doctors are still the most important and trustworthy source for patients [6]. Therefore, doctors play a key role to reach patients and raise awareness on vaccination among them.

In this study, we aimed to compare the attitudes and knowledges of the residents and specialists in obstetrics and gynecology (O&G) about influenza vaccine, Tdap vaccine and Td vaccine among pregnant women.

Material and Method

This survey was conducted in February 2017 among obstetrics and gynecology residents and specialists working in Zekai Tahir Burak Women’s Health Education and Research Hospital, Ankara, Turkey. An approval from local institutional ethical committee was obtained before this study. A total of 103 participants; 64 residents and 39 specialists were invited to take this survey after they gave a verbal informed consent. They answered an anonymous, self-administered, paper-based survey including questions about their attitudes and practices of influenza vaccine and tetanus, diphtheria vaccine and tetanus, diphtheria, and acellular pertussis vaccine (Tdap) among pregnant women and their source for recommendation of vaccines.

Statistical analysis was performed out by SPSS (Statistical Package for the Social Sciences) for Windows 22 (SPSS Inc., Chicago, IL).

Results

Out of the 103 participants recruited in this survey; 64 was O&G residents and 39 was O&G specialists. The characteristics of 103 participants are shown in Table 1.

Variables	Residents in O&G (n = 64)	Specialists in O&G (n = 39)	p
Age (years)	27.9 ± 1.8	34.6 ± 4.4	< 0.001
Gender			
Female	38 (59.4)	25 (64.1)	0.633
Male	26 (40.6)	14 (35.9)	
Experience (years)	3.0 ± 1.6	9.9 ± 4.4	< 0.001

Table 1: The characteristics of the residents and specialists in O&G.

Variables are expressed as number ± SD and number (percentile), p < 0.05 was accepted as significant. O&G: Obstetrics and Gynecology

Implementations by Turkish Ministry of Health was the main reference for recommending for vaccination among doctors which was accepted by 93.8% of residents and 87.2% of specialists. American Congress of Obstetricians and Gynecologists (ACOG) was the second most common reference in both groups. The sources of knowledge for recommendation of vaccination are represented in Table 2.

A favorable attitude towards vaccination of Influenza was expressed by 60 residents (93.8%) and 36 specialists (92.3%) (p = 1), however only 30 residents (46.9%) and 24 specialists (61.5%); (p = 0.148) reported routinely recommending influenza vaccine to pregnant women in their current practice (Table 3). A favorable attitude towards vaccination of Tdap was expressed by 36 residents (56.3%) and 19 specialists (48.7%) (p = 0.457), however only 27 residents (42.2%) and 17 specialists (43.6%); (p = 0.889) reported routinely recommending Tdap vaccine to pregnant women in their current practice. A favorable attitude towards vaccination of Td was expressed by 52 residents (81.3%) and 37 specialists (94.9%) (p = 0.457), however only 45 residents (70.3%) and 30 specialists (76.9%); (p = 0.465) reported routinely recommending Td vaccine to pregnant women in their current practice.

Recommendation Source	Residents in O&G (n = 64)	Specialists in O&G (n = 39)	p
Ministry of Health	60 (93.8)	34 (87.2)	0.252
ACOG	54 (84.4)	28 (71.8)	0.124
CDC	11 (17.2)	11 (28.2)	0.186
National Associations	13 (20.3)	10 (25.6)	0.529
Literature	21 (32.8)	11 (28.2)	0.624
Producer	0 (0)	0 (0)	1

Table 2: The comparison of the recommendation source of the residents and specialists in O&G.

Variables are expressed as number (percentile), $p < 0.05$ was accepted as significant. O&G: Obstetrics and Gynecology

Variables	Residents in O&G (n = 64)	Specialists in O&G (n = 39)	p
A favorable attitude towards vaccination of Influenza	60 (93.8)	36 (92.3)	1
Routinely recommendation of influenza vaccine to pregnant women in their current practice	30 (46.9)	24 (61.5)	0.148
A favorable attitude towards vaccination of Tdap	36 (56.3)	19 (48.7)	0.457
Routinely recommendation of Tdap vaccine to pregnant women in their current practice	27 (42.2)	17 (43.6)	0.889
A favorable attitude towards vaccination of Td	52 (81.3)	37 (94.9)	0.05
Routinely recommendation of Td vaccine to pregnant women in their current practice	45 (70.3)	30 (76.9)	0.465

Table 3: The attitudes and knowledges of the residents and specialists in O&G about influenza vaccine and tetanus, diphtheria, and acellular pertussis vaccine among pregnant women.

Variables are expressed as number (percentile), $p < 0.05$ was accepted as significant. O&G: Obstetrics and Gynecology; Tdap: Tetanus, Diphtheria, and Acellular Pertussis Vaccine; Td: Tetanus and Diphtheria

Discussion

In our study, we found that both O&B specialists and residents mainly followed vaccination recommendations of Turkish Ministry of Health secondly followed by ACOG guidelines. Both groups had a favorable attitude towards seasonal influenza and Td vaccine with higher rates as 81 - 95% while in routine practice only 46 - 61% recommended influenza vaccine and 70 - 76% recommended Td vaccine to their patients. A favorable attitude towards Tdap vaccination was lower in both groups (48 - 56%) when compared to influenza and Td vaccines, as well as the low recommendation rates of Tdap. A study from Turkey which analyzed 198 pregnant women who had completed 26 weeks of gestation in 2010 reported vaccination rates were 47.0% for tetanus, 9.1% for H1N1 influenza virus and 3% for seasonal influenza [10]. These lower rates were especially regretting while all these vaccinations were provided for free by the government.

The reason why Tdap was less preferred could be that pregnant women are traced by family doctors; Td vaccine is routinely recommended and administered for free in order with guidance with Ministry of Health, as well as influenza vaccine in epidemic season. However, Tdap vaccine is not in routine program of Ministry of Health. An outbreak of pertussis has not been precisely defined in Turkey, probably because of the difficulties in diagnosis of pertussis; as painful nasopharyngeal sampling or expensive polymerase chain reac-

tion (PCR). Nevertheless, it is estimated that there are considerable amount of pertussis cases not diagnosed with proper methods. Esen, *et al.* analyzed anti-pertussis toxin antibodies among 2,085 subjects and reported that up to half of the expected mothers did not have sufficient level of antibody titers and recommended vaccination of adults in order to prevent transmission of infection especially to infants and young children [11].

The maternal and neonatal tetanus (MNT) elimination is defined as neonatal tetanus cases < 1 per 1,000 live births in every district of every country and goals for MNT elimination was announced by World Health Organization (WHO), United Nations Children's Fund (UNICEF) and United Nations Population Fund (UNFPA) in 1999 [12]. Turkey achieved MNT elimination in 2008 via the successfully followed national vaccination program and improvement in access to health care services for hygienic delivery and cord clamping as a result of socio-economic development [12].

The population study in Turkey which investigated 36 maternal deaths due to H1N1 influenza infection in 2009 pandemic reported; risk of death associated with H1N1 influenza infection was four times higher in pregnant and postpartum women than in the general population [13]. During this pandemic, vaccination rate in Turkey was reported 8.9% by Ozer, *et al* [14].

The strength of our study is that this survey was taken in one of the biggest obstetrics and gynecology hospital in Turkey which has 12,000 – 13,000 births and over 200,000 applies for prenatal visits. All the prenatal care providing doctors who participated in this study had homogenous working conditions as similar patient population, similar socio-demographic characteristics and hospital facility with continuing medical education and lectures. As this was an anonymous self-administered survey, bias while answering the questions was minimized.

Conclusion

In conclusion, despite the national health care policies which are followed by obstetricians, periodic campaigns for vaccination are needed to create awareness among pregnant and update knowledge of obstetricians to put into routine practice. Vaccination of future mothers is not only important for immunizing pregnant but also preventing disease transmission from mother to infants and passive immunization of infants by transplacental maternal antibodies.

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Conflict of Interest

No conflict of interest was declared by the authors.

Disclosure

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Bibliography

1. Mertz D., *et al.* "Pregnancy as a risk factor for severe outcomes from influenza virus infection: A systematic review and meta-analysis of observational studies". *Vaccine* 35.4 (2017): 521-528.
2. Tapia MD., *et al.* "Maternal immunisation with trivalent inactivated influenza vaccine for prevention of influenza in infants in Mali: a prospective, active-controlled, observer-blind, randomised phase 4 trial". *The Lancet Infectious Diseases* 16.9 (2016): 1026-1035.
3. Barber A., *et al.* "Coverage with Tetanus, Diphtheria, and Acellular Pertussis Vaccine and Influenza Vaccine Among Pregnant Women - Minnesota, March 2013-December 2014". *MMWR Morbidity and Mortality Weekly Report* 66.2 (2017): 56-59.

4. Liu L., *et al.* "Global, regional, and national causes of under-5 mortality in 2000-15: an updated systematic analysis with implications for the Sustainable Development Goals". *Lancet* 388.10063 (2016): 3027-3035.
5. "Tetanus vaccines: WHO position paper - February 2017". *Releve epidemiologique hebdomadaire* 92.6 (2017): 53-76.
6. Dvalishvili M., *et al.* "Knowledge, attitudes, and practices of healthcare providers in the country of Georgia regarding influenza vaccinations for pregnant women". *Vaccine* 34.48 (2016): 5907-5911.
7. "Vaccines against influenza WHO position paper - November 2012". *Releve epidemiologique hebdomadaire* 87.47 (2012): 461-476.
8. Butler AM., *et al.* "Predictors of Low Uptake of Prenatal Tetanus Toxoid, Reduced Diphtheria Toxoid, and Acellular Pertussis Immunization in Privately Insured Women in the United States". *Obstetrics and Gynecology* 129.4 (2017): 629-637.
9. Centers for Disease C, Prevention. "Updated recommendations for use of tetanus toxoid, reduced diphtheria toxoid, and acellular pertussis vaccine (Tdap) in pregnant women--Advisory Committee on Immunization Practices (ACIP), 2012". *MMWR Morbidity and Mortality Weekly Report* 62.7 (2013): 131-135.
10. Celikel A., *et al.* "Determination of vaccination status of pregnant women during pregnancy and the affecting factors". *Journal of Clinical Nursing* 23.15-16 (2014): 2142-2150.
11. Esen B., *et al.* "Prevalence of high antibody titers of pertussis in Turkey: reflection of circulating microorganism and a threat to infants". *Journal of Clinical Laboratory Analysis* 21.3 (2007): 154-161.
12. "Validation of elimination of neonatal tetanus in Turkey by lot quality assurance cluster sampling". *Releve epidemiologique hebdomadaire* 84.17 (2009): 141-146.
13. Dede FS., *et al.* "Maternal deaths associated with H1N1 influenza virus infection in Turkey: a whole-of-population report". *BJOG: An International Journal of Obstetrics and Gynaecology* 118.10 (2011): 1216-1222.
14. Ozer A., *et al.* "Status of pandemic influenza vaccination and factors affecting it in pregnant women in Kahramanmaraş, an eastern Mediterranean city of Turkey". *PloS one* 5.12 (2010): e14177.

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