ANKARA MEDICAL JOURNAL

Research Article

Ankara Med J, 2022;(1):1-12 // 10.5505/amj.2022.37108

ASSESSMENT OF PREGNANCY FOLLOW-UPS FOR CASES REGISTERED IN A FAMILY HEALTH CENTER

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Submitted: 22.10.2021 // Accepted: 08.02.2022

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ANKARA MEDICAL JOURNAL

Abstract

Objectives: Our research aimed to evaluate the antenatal care (ANC) and pregnancy outcomes for pregnant cases registered with a family practice unit providing primary health services.

Materials and Methods: Data for 385 pregnant cases aged 18 to 40 years registered with a family health center from 15/07/2010 to 01/02/2019 were screened from the "Family Practice Information Management System" database. Data regarding antenatal visits were statistically investigated and the p-value below 0.05 was accepted as significant.

Results: The mean age was 28.66±5.36 years. The mean pregnancy week of first attendance was 9.59±5.52. Of pregnant cases, 89.61% received iron, 47.79% vitamin D and 63.63% folic acid supplements. Of the patients, 81.81% had the first trimester, and 76.88% had second-trimester screening tests. 71.42% of patients had gestational diabetes screening, and 88.83% had detailed ultrasonography. 78.44% of patients had tetanus-diphtheria vaccination, while no pregnant case had influenza vaccination. The age and gravida did not affect receiving ANC, vitamin D, iron supplementation and tetanus-diphtheria vaccination status. Vitamin D use was higher in groups receiving education compared to those not receiving education. When the educated group was assessed among themselves, the use of supplements reduced as the educational level increased.

Conclusion: There is a need to increase referrals for iron, vitamin D, and folic acid supplementation and for screening during antenatal follow-up. The tetanus-diphtheria vaccination rate was observed to be lower than ideal. Additionally, it appears administration of seasonal flu vaccines is deficient, and necessary steps should be taken to reduce concerns related to vaccination.

Keywords: Antenatal care, family physician, pregnancy.

Introduction

Maternal and infant health is among the most important indicators of social welfare levels. Pregnancy and labor are the periods with the most frequent morbidity and mortality for women worldwide. In Turkey, antenatal care (ANC) services are provided by family clinicians and family health workers in "Family Health Centers". The 'safe motherhood' movement, begun by the World Health Organization (WHO) in 1987, created management guides for antenatal care. The aim of antenatal care is to provide health care services to women during pregnancy and labor, to identify risk groups and additionally organize care plans for these groups. In Turkey, the 'Antenatal Care Management Guide' was created by the Ministry of Health and is updated at regular intervals.[1] Antenatal care is one of the best outputs indicating the development of health care services and ensures reductions in maternal and fetal mortality. Globally, nearly 810 women die due to pregnancy and related reasons every day. Of all maternal deaths, 94% occur in low- and moderate-income countries.[2] The definition of maternal mortality encompasses deaths occurring from the start of pregnancy until the 42nd day after birth. Among women with live births, the rate of those dying within one year after birth is given per 100,000 live births. For the world in general, 2015 data show mean maternal deaths were 216/100,000. Within the same year, the deaths of more than 300,000 women were included in the definition of maternal mortality. In Turkey, this number was reported as 13.6 for 2018.[3] Care plans in the Ministry of Health ANC Management Guide are implemented by family clinicians and their teams. Within the framework of this plan, the number of pregnancy check-ups and elements that require attention during these check-ups are defined in detail in the guide. The guide reports four check-ups are required within the first 14 weeks of pregnancy and in weeks 18-24, 26-32 and 36-38, and defines the anamnesis, examinations, laboratory tests, measurements and counseling services that should be provided in detail. According to WHO data, 75% of pregnant cases receive sufficient ANC in the world, while this rate is 88.9% for our country.[2] The vaccination, pregnancy, infant and child check-ups that family clinicians are responsible for are considered within the scope of the performance assessment for family health centers, and disciplinary measures to be applied if these responsibilities are not fulfilled are stated in the legislation.

The aim of the research was to assess the antenatal care services and pregnancy outcomes since the beginning of the family clinician system in a family health center based on retrospective data.

Materials and Methods

The population for the study comprised pregnant cases registered with Ankara Keçiören Şevkat-1 Family Health Center Family Clinician unit number 0617052 from 15/07/2010 to 01/02/2019. The sample comprised 385 pregnant cases aged from 18-40 years registered with family clinician unit number 0617052 in the family health center who were pregnant between these dates. The study was designed to be retrospective, and data

for women included in the study were screened from the Neuroogle Family Practice Information Management System (NAHBS) database. Women pregnant between these dates who did not attend check-ups were interviewed, and also data for women were evaluated by accessing the 'e- nabız' information system.

The NAHBS database, Republic of Turkey Ministry of Health' e- nabız' database and interviews were women were used to record the date of first attendance, the number of check-ups, demographic data (educational status, age, age of marriage, consanguinity, date of pregnancy, smoking, height, maternal weight during first pregnancy check-up and fourth check-up, gravida, parity, abortus/stillbirth history, blood group), systemic disease history (thyroid function disorder, diabetes, hypertension, asthma, epilepsy and others), the status of receiving antenatal care and the number of check-ups, check-up parameters (iron, vitamin D and folic acid supplementation, first trimester (double marker screening test) and second trimester (triple test) screening results, secondary stage obstetric ultrasonography (USG) results, oral glucose screening test, tetanus inoculation) and birth outcomes (type of birth, week of birth, place of birth, live/stillbirth, birth weight). Statistical analyses were performed.

All analyses in the research were completed with the SPSS 25.0 program. Continuous numerical variables are given as mean ± standard deviation, median (minimum-maximum) values, while categoric variables are given as number (percentage) style. The normal distribution of numerical data was checked with the Shapiro-Wilk test. When the assumption of normal distribution was met, comparisons of continuous numerical data between two groups used the independent samples t-test and ANOVA test, while the Mann Whitney U test and Kruskal Wallis test were used if the assumption of normal distribution was not met. For comparisons between groups, the Bonferroni correction was used. Comparison of distributions between groups of categoric variables used the Pearson chi-square and Fisher's exact test. Comparison of continuous variables used the Pearson or Spearman correlation coefficient according to the status of fit to normal distribution. For statistical significance, p values below 0.05 were accepted as the limit.

Results

The mean age of the 385 women included in the study was 28.66±5.36 years, with the mean age of marriage 22.72±4.52 years. Of women in our research, 115 were primary-middle school graduates (29.87%), 114 were high school graduates (29.61%), 86 were university and master-degree graduates (22.33%), three had not received education (0.77%), and information about educational status could not be reached for 67 women (17.40%). While 77 women smoked (20%), 286 women did not smoke (74.28%), and information about smoking status could not be reached for 22 women (5.71%). For 344 women, information about consanguinity could be reached, and 48 women were married to relatives (12.46%). The mean height of women in our research group was 162.70 ± 5.52 (147-176) cm. Weight at the start of pregnancy was 65.11±11.43 kg (39-

127), and weight at the end of pregnancy was 76.28±11.41 kg (47-130), with a mean weight increase during pregnancy of 11 kg. The mean body mass index (BMI) was 24.63 kg/m^2 at the start of pregnancy and 28.81 kg/m^2 at the end of pregnancy. High BMI at the start of pregnancy was associated with gestational diabetes (p=0.021), while BMI of 19 and above were associated with an increase in neonate birth weight (p=0.46).

The mean week of pregnancy, when patients attended the first check-up, was 9.59±5.52, and the mean number of antenatal check-ups was 3.28±1.38. There was positive significance between ANC and gravida (p=0.021), with the highest ANC rates observed in the group with 2-3 pregnancies. Age and educational status did not affect receiving ANC. Mean ANC check-up numbers were lower for women during their first pregnancy (3±161) compared to women in their second or third pregnancies (3.53±1.24) (p=0.031). The pregnancy check-up numbers for women with four or more pregnancies were not different compared to the other groups.

Of women participating in the study, 89.61% received oral iron, 47.79% vitamin D and 63.63% folic acid supplements. Among patients, 81.81% had performed first-trimester screening tests, and 76.88% had performed second-trimester screening tests. While 71.42% of patients had gestational diabetes screening performed, 88.83% had 2nd stage USG performed. During check-ups, 78.44% of patients had tetanus-diphtheria (Td) vaccination; however, no participant had influenza vaccination. Analysis of parameters investigated during pregnancy check-ups is presented in Table 1. The iron supplementation of pregnant cases was not affected by age, educational status and number of pregnancies, with no statistically significant correlations between iron supplementation with age (p=0.546), educational level (p=0.192) and the number of pregnancies (p=0.762). There were no statistically significant correlations between vitamin D use with gravida and age, but there was a correlation with educational status (p=0.009) (Table 2). The group not receiving education had lower vitamin D use, while in-group analysis of the educated group observed that the group with the least vitamin D supplementation had an educational level of doctorate or above (Table 2). There were no statistically significant correlations identified between Td inoculation status with age (p=0.521), educational status (p=0.817) and gravida (p=0.888) (Table 2).

The mean week of birth for patients included in the study was 37.31±5.54, with a mean neonate weight of 3177.13±572.60 g. Of patients, 49.09% had a cesarean birth, and 70.90% of patients gave birth in a medical faculty or educational hospital, 13.50% in a private hospital and 12.50% in a state hospital. Among patients, information about birth centers could not be reached for 12 cases (3.11%).

Table 1. Analysis of participation in pregnancy check-ups

	Yes n (%)	No n (%)	No information n (%)
Oral iron supplement	345 (89.61)	40 (10.39)	
Vitamin D supplement	184 (47.79)	201 (52.20)	
Folic Acid supplement	245 (63.63)	140 (36.36)	
First trimester screening test	315 (81.81)	67 (17.40)	3 (0.77)
Second trimester screening test	296 (76.88)	85 (22.07)	4 (1.03)
Gestational diabetes screening	275 (71.42)	107 (27.79)	3 (0.77)
Secondary stage ultrasonography	342 (88.83)	40 (10.38)	3 (0.77)
Td (Tetanus-Diphtheria) Vaccination	302 (78.44)	83 (21.55)	

Table 2. Distribution of antenatal care, iron supplementation, vitamin D supplementation and Tetanus-diphtheria (Td) vaccination according to age, gravida and educational status

	Received antenatal care			**Iron supplement**			**Vitamin D supplement**			**Tetanus-diphtheria vaccination**		
	Yes	**No**		**Yes**	**No**		**Yes**	**No**		**Yes**	**No**	
	n (%)	**n (%)**	**p**	**n (%)**	**n (%)**	**p**	**n (%)**	**n (%)**	**p**	**n (%)**	**n (%)**	**p**
Age												
<30	223 (65.58)	30 (66.66)	0.886	225 (65.21)	28 (70.00)	0.546	117 (63.58)	136 (67.66)	0.331	196 (64.90)	57 (68.67)	0.521
≥30	117 (34.42)	15 (33.34)		120 (34.79)	12 (30.00)		67 (36.42)	65 (32.34)		106 (35.10)	26 (31.33)	
Educational status												
None	3 (1.06)	0	0.438	3 (1.06)	0	0.192	3 (1.85)	0	**0.009**	3 (1.19)	0	0.814
Primary-middle school	99 (35.23)	16(43.24)		102 (36.04)	13 (37.14)		54 (33.33)	61 (39.10)		88 (34.92)	27 (40.90)	
High school	105 (37.36)	9 (24.32)		97 (34.27)	17 (48.50)		49 (30.24)	65 (41.66)		92 (36.50)	22 (33.33)	
Associate-undergraduate degree	70 (24.91)	12 (32.43)		78 (27.56)	4 (11.42)		53 (32.71)	29 (18.58)		66 (26.19)	16 (24.24)	
Doctorate and above	4 (1.42)	0		3 (1.06)	1 (2.85)		3 (1.85)	1 (0.64)		3 (1.19)	1 (1.51)	
Gravida												
1	99 (29.11)	23 (51.11)	**0.021**	109 (31.59)	13 (32.50)	0.762	64 (34.78)	58 (28.85)	0.330	96 (31.78)	26 (31.32)	0.888
2-3	194 (57.05)	15 (33.33)		189 (54.78)	20 (50.00)		98 (53.26)	111 (55.22)		165 (54.63)	44 (53.01)	
≥4	47 (13.82)	7 (15.55)		47 (13.62)	7 (17.50)		22 (11.95)	32 (15.92)		41 (13.57)	13 (15.66)	

Positive and weak correlations were identified between maternal weight at the beginning of pregnancy (p=0.001, r=0.198) and at the end of pregnancy (p=0.001, r=0.246) with neonate birth weight. Maternal age, pregnancy and birth numbers did not affect neonate birth weight; however, smoking caused an increase in low birth weight (LBW) among neonates (p=0.036). The number of pregnancies did not differ according to the educational status of women; however, most women with four or more pregnancies were women with primary-middle school education, and most women in the uneducated group had four or more pregnancies. In our research, 84.15% of pregnant cases (324) received breastfeeding training.

There were no statistically significant correlations identified between the first-trimester screening test, second-trimester screening test, secondary stage ultrasonography screening and gestational diabetes screening with educational level, age and gravida number. Details are shown in Table 3.

Table 3. Distribution of first trimester (double marker), second trimester (triple test), gestational diabetes screening and detailed ultrasonography according to age, gravida and educational status

	First-trimester screening test			Second-trimester screening test			Gestational diabetes screening			Secondary stage ultrasonography		
	Yes	No		Yes	No		Yes	No		Yes	No	
	n (%)	n (%)	p	n (%)	n (%)	p	n (%)	n (%)	p	n (%)	n (%)	p
Age												
<30	208 (66.03)	43 (64.17)	0.772	199 (67.22)	52 (61.17)	0.299	178 (64.72)	73 (68.22)	0.518	222 (64.91)	57 (68.67)	0.339
≥30	107 (33.96)	24 (35.83)		97 (32.78)	33 (38.83)		97 (35.28)	34 (31.78)		120 (35.08)	26 (31.32)	
Educational status												
None	3 (1.13)	0	0.128	3 (1.21)	0	0.817	3 (1.31)	0	0.747	3 (1.05)	0	0.326
Primary-middle school	85 (32.07)	29 (50.87)		87 (35.36)	27 (38.57)		80 (34.93)	34 (34.63)		97 (34.15)	17 (51.51)	
High school	98 (36.98)	16 (28.07)		89 (36.17)	25 (35.71)		81 (35.37)	33 (33.67)		101 (35.56)	13 (39.39)	
Associate - undergraduate degree	77 (29.05)	10 (17.54)		65 (26.42)	16 (22.85)		63 (27.51)	19 (19.38)		79 (27.81)	3 (9.09)	
Doctorate and above	2 (0.75)	2(3.50)		2 (0.81)	2 (2.85)		2 (0.87)	2 (2.04)		4 (1.40)	0	
Gravida												
1	104 (33.01)	17 (25.37)	0.380	98 (33.10)	22 (25.88)	0.347	93 (33.81)	28 (26.16)	0.344	113 (33.04)	8 (20.00)	0.915
2-3	169 (53.65)	38 (56.71)		159 (53.71)	48 (56.47)		145 (52.72)	62 (57.94)		184 (53.80)	23 (57.50)	
≥4	42 (13.33)	12 (17.91)		39 (13.17)	15 (17.64)		37 (13.45)	17 (15.88)		45 (13.15)	9 (22.50)	

There was a statistically significant correlation identified between the birth center and educational status (p=0.001). All three uneducated pregnant cases, 72.17% of 115 primary-middle school graduates (83 cases),

74.50% of high school graduates (85 cases), 52.43% of undergraduates (27 cases) and 50% of cases with a doctorate or above (4 cases) gave birth in education-research hospitals or faculty hospitals. The group with undergraduate and higher education were observed to have higher rates for births in private hospitals compared to other groups (p=0.001).

Discussion

In this study, the pregnancy check-ups performed in a family health center after initiating the family clinician system with changes to Turkey's health system were retrospectively assessed. Of the 385 women included in the study, the mean age was 28.66±5.36 years, the mean pregnancy week of first attendance was 9.59±5.52, and the mean number of check-ups before birth was 3.28±1.38. Of the patients participating in the study, 89.61% used oral iron, 47.79% used vitamin D and 63.63% used folic acid supplementation. In terms of scans, 81.81% of patients had the first-trimester screening, and 76.88% had the second-trimester screening performed. While 71.42% of patients had gestational diabetes screening performed, 88.83% had 2nd stage USG performed. Tetanus-diphtheria vaccination was given to 78.44% of patients during follow-up. Age and gravida did not affect attending ANC, vitamin D, iron supplementation and Td vaccination status. Educational status did not affect any variable, apart from vitamin D supplementation. The educated group had higher vitamin D use than the uneducated group, but when the educated group was assessed within-group, the use of supplements reduced as the educational level increased.

National and international guidelines recommend that the first check-up during pregnancy should occur within the first 10-14 weeks of pregnancy.[1] This was the case in our center, with the mean number of ANC check-ups lower for women during their first pregnancy than women in their second and third pregnancies. In countries with high development levels, 98% of pregnant cases attend ANC at least once, while this rate is 65% for less developed countries (73,74). According to Turkish Demographic and Health Survey (TNSA) data, in 1993, the ANC rate was 62%, with 54% attending ANC in the first three months and 36% attending ANC check-ups four or more times. According to 2018 data, the ANC rate was 96%, with 90% attending in the first three months and attending four or more ANC check-ups.[4,5] According to United Nations International Children's Emergency Fund (UNICEF) data, globally, 86% of pregnant women from 15-49 years of age receive care from health personnel at least once before birth, while only 61% receive care at least four times. The rate of women aged 15-49 years attending at least four antenatal care appointments during pregnancy was 50% from 2006-2012, while this rate was stated to be 65% between 2013-2018.[6,7] As family medicine practice targets tight control and organization of pregnancy check-ups at 100% rates, pregnant cases are automatically registered with the family clinician system when they receive a pregnancy diagnosis from any health organization and pregnancy check-ups begin. In our unit, nearly all registered and pregnant women (97-100%) had pregnancy identified and all of our monitored pregnant cases were given ANC services. In our research, the mean value of the first

check-up week of pregnancy was 9.6, which abides by the Ministry of Health ANC management guide; however, the mean number of check-ups was 3.3, and efforts should be made to ensure each pregnant case attends at least four check-ups.

According to the Ministry of Health Antenatal Care Management Guide, under normal conditions, supplementation of 40-60 mg/day iron from the 16th week, 1200 IU/day vitamin D from the 12th week and 400-800 µg/day folic acid beginning one month before pregnancy and continuing to the 12th week should be given.[1] According to WHO 2019 data, the frequency of anemia is 36.5% in pregnancy.[8] Regions with the highest anemia rates in pregnant women are India (50.1%) and countries in central Africa (45-59%).[8] Mean hemoglobin level during the first check-up for pregnant cases participating in our study was 12.52 g/dL, and mean hemoglobin level at final check-up was 11.73 g/dL. In our research group, the number of pregnant cases who were anemic (hemoglobin <11 g/dL according to WHO criteria) was 65 at the start of pregnancy (16.8%) and 158 at the end of pregnancy (41.03%). A study assessing ANC services in Turkey in 2015 found that 229 (88.0%) of the pregnant women participating in the research (total 260) were using oral iron supplements, while 231 (88.8%) were using multivitamin preparations.[9] Iron supplementation rates vary in national studies,[10,11,] while the TNSA 2018 study reported 81% of women in the 15-49-year age group used iron supplementation during their last pregnancy.[4] In our research, the rate of pregnant cases using iron supplements was 89.61%. The iron supplementation rates among our pregnant cases are similar to the national figures but appear inadequate. This inadequacy is thought to be related to treatment compliance.

In this study, the vitamin D supplementation rate was 47.79%. Though the same guidelines are followed, this rate displays regional differences in society.[11,12] These differences may be the result of sociocultural differences reflecting societal trends. In the uneducated group, vitamin D use was low. However, when the educated group was assessed, the lowest vitamin D supplementation rate was observed in the group with doctoral education or above. As education increases, compliance with family medicine check-ups and treatments reduce. Apart from family clinicians performing pregnancy check-ups, doctors do not reflect the insistence on iron and folic acid supplementation for vitamin D use. For folic acid use, social differences are reported; different studies found folic acid use rates vary from 48-79%. In our research group, 63.63% of pregnant cases used folic acid supplements during the first trimester. When assessed based on guideline recommendations, the iron, vitamin D, and folic acid supplementation rates for pregnant cases included in the study did not appear to be at the targeted levels.

In our research, 81.81% of women had a first-trimester screening, 76.88% had a triple screening, 71.42% had gestational diabetes screening (oral glucose tolerance test, OGTT), and 88.83% had detailed USG during pregnancy. The rates for screening tests in our study are similar to the averages for the country. A study comparing before and after the changes in the health service in 2014 found that the rates for double, triple and

quadruple tests were 45% before the transformation in health and 77% after the transformation.[14] OGTT rates were 33% before the transformation in health and 88% after the transformation.[14] OGTT rates are lower than other screening tests, and this is reported to be affected by unchecked speculative explanations not based on science made by unqualified individuals about the topic in the national written and visual media.[15] Additionally, when the reasons for not doing the OGTT test are examined among pregnant cases, 56.3% thought the test was not necessary, 21.5% thought the test was harmful to themselves or the fetus and 17.4% stated they did not do the test as their doctor did not recommend it.[16] In our study, nearly 90% of cases had a detailed ultrasound performed, showing that pregnant cases were sufficiently informed and directed toward screening for radiological anomalies and the high implementation rates. Additionally, in our study, there were no statistically significant correlations identified between first-trimester screening, second-trimester screening, GDM screening and detailed USG with educational status, age and gravida. This situation shows that pregnancy screening is implemented in ANC services independent of education, age and gravida.

According to the Ministry of Health ANC Management Guide, Td vaccination should be administered from the 12th week (16th week according to vaccination calendar) and other doses performed according to the vaccination calendar. According to the TNSA 2018 study, 81% of mothers with last live birth within the previous five years had Td vaccinations within the scope of ANC.[4] On 24 April 2009, the WHO declared that maternal and neonatal tetanus was eliminated in Turkey.[17,18] In our research, 78.4% of pregnant cases had Td vaccination, which is close to the average for the country; however, higher rates should be targeted. In our research, there were no statistically significant correlations identified between Td vaccination status with age (p=0.521), educational status (p=0.817) and gravida (p=0.888). A study researching factors affecting vaccination in 2005 observed that as the educational status increased, the vaccination rate increased; however, a study with a similar population in 2015 found that as educational status increased, vaccination rates fell.[19,20] It appears that anti-vaccination has begun to find a place among the educated population through the years.

It was determined that 49.09% of pregnant cases gave birth with cesarean section. According to TNSA 2018 data, Turkey had a cesarean birth rate of 52%. According to TNSA 1993, the cesarean rate was 7%, while it increased through the years to reach 48% according to TNSA 2013 before the increase rate slowed compared to previous years and reached 52% in TNSA 2018. In our research population, cesarean rates were similar to the country average; however, it is much above the targeted level. Though the decision about the form of birth is not made in primary stage services, in addition to ANC services, studies to reduce fears related to vaginal birth of candidate mothers and labor preparation work will reduce cesarean surgeries performed for social reasons.

The pregnancy numbers did not differ according to the educational status of women; however, most women with four or more pregnancies comprised women with primary-middle school education and most women in

the uneducated group had four or more pregnancies. The TNSA 2018 study found that the total fertility rate in Turkey was 2.3 children per woman. While the total fertility rate was highest among uneducated women or women who did not finish primary school,[2,5] was lowest among women with high school or higher education.[1,4,23]

The increase in LBW rates for mothers who smoke was shown in our research results. In parallel with many studies, smoking caused low birth weight in our research.[24] From this perspective, if not provided before pregnancy, mothers should be given detailed information about smoking, and efforts should be made to ensure they try to quit or reduce the habit at the start of pregnancy.

According to the Ministry of Health ANC Management Guide, breastfeeding and breastmilk counseling should begin after the 28th week.[1] Providing breastfeeding counseling and early beginning of breastfeeding are essential in maternal and infant health. In our research, the education rate was high (84.2%); however, the target is that all monitored pregnant cases be given education.

In conclusion, it appears the number of pregnancy check-ups in primary services approaches the levels targeted. It was concluded that there is a need to support vitamin and mineral supplementation recommended in pregnancy. Additionally, in spite of being a study in a metropolitan center, the screening tests did not appear complete. The causes of these inadequacies should be researched, and patients' compliance with screening tests should be increased. Additionally, some patients had complete vaccination for tetanus suppression, while some remained inadequate due to not wanting the vaccination. Though seasonal flu vaccines are recommended in the ministry guidelines, it is thought-provoking that none were administered. Awareness and referrals should be provided about this topic when necessary. Generally, the necessary organization should be provided by identifying if the inadequacy of necessary follow-up and tests performed outside the primary healthcare settings in this study of an educated section of society without poor welfare levels is due to reasons such as lack of awareness among patients or appointment congestion, etc. Contrary to previous studies, educational level was revealed not to affect vaccination and screening positively. This may be due to changes in access routes to information and data without scientific support being reached by the educated group. If this topic is not rapidly resolved, anti-vaccination will be an unavoidable threat to social health in epidemics like COVID-19 affecting the whole world for nearly two years.

Ethical considerations: Ethical approval was taken from local ethics committee on 19/12/2018 with number 26379996/320. The approval dated 05/03/2019 and numbered 604.02-E.147 was received from Ankara Provincial Health Directorate.

Conflict of Interest: The authors declare no conflict of interest.

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