

# Awareness of Pregnant Women About Routine Applied Screening Tests and Supportive Treatments in a University Hospital

## Bir Üniversite Hastanesinde Rutin Uygulanan Tarama Testleri ve Destek Tedavileri Hakkında Gebelerin Farkındalıkları

© Ruğuşen Kutlu<sup>1</sup>, © Latife Uzun<sup>1</sup>, © Nazan Karaođlu<sup>1</sup>, © Hüseyin Görkemli<sup>2</sup>

<sup>1</sup>Necmettin Erbakan University Meram Faculty of Medicine, Department of Family Medicine, Konya, Turkey

<sup>2</sup>Necmettin Erbakan University Meram Faculty of Medicine, Department of Obstetrics and Gynecology, Konya, Turkey

### ABSTRACT

**Introduction:** In this study, we aimed to evaluate the awareness of pregnant women about routine applied screening tests and supportive treatments in a university hospital and the factors affecting this.

**Methods:** This observational, descriptive study was carried out between 15<sup>th</sup> April and 30<sup>th</sup> November 2018. Four hundred and ninety-three volunteer pregnant women who applied to the Necmettin Erbakan University Meram Faculty of Medicine outpatient clinic for the first time or were being followed up formed the study cohort. In order to determine socio-demographic characteristics, awareness of screening tests, and supportive therapies, and the factors affecting this, a questionnaire consisting of 36 multiple-choice, open-ended questions was applied through face-to-face interviews.

**Results:** The median age of the participants was 27. More than half (57.4%) were graduated from primary school or did not receive education, and 89.0% were unemployed. The majority of the participants stated that they knew screening tests (92.1%) and supportive treatments (93.9%). Forty-eight point one percent and 44.0% of screening tests and supportive treatments were learned from obstetricians, respectively. The reason stated by 57.6% of the participants who did not want to have screening tests was, "I find it unnecessary because I do not want to end my pregnancy". Participants who were 27 years old or older ( $p=0.021$ ), who were at least high school graduates ( $p=0.016$ ), who were employed ( $p=0.041$ ), and who had given birth before ( $p<0.001$ ) knew the screening tests more significantly.

**Conclusion:** The study results showed that the awareness of pregnant women about screening tests and supportive treatments increased with increasing maternal age, education level, employment status, and the number of births. Although the percentage of getting information from healthcare workers about screening tests and supportive treatments was higher, it was still not at the desired level. Therefore, we believe that healthcare workers should be more sensitive to informing and counseling during prenatal care, especially for young and low-educated mothers living in rural areas.

**Keywords:** Prenatal care, screening tests, supportive treatments, pregnancy

### ÖZ

**Amaç:** Bu çalışmada bir üniversite hastanesinde rutin uygulanan tarama testleri ve destek tedavileri hakkında gebelerin farkındalıkları ve bunu etkileyen faktörleri değerlendirmeyi amaçladık.

**Yöntemler:** Bu gözlemsel, tanımlayıcı çalışma 15 Nisan-30 Kasım 2018 tarihleri arasında gerçekleştirildi. Necmettin Erbakan Üniversitesi Meram Tıp Fakültesi polikliniğine ilk kez başvuran ya da takip edilmekte olan 493 gönüllü gebe kadın çalışma grubunu oluşturdu. Sosyo-demografik özelliklerini, tarama testleri ile destek tedavileri hakkındaki farkındalıkları ve bunu etkileyen faktörleri belirlemek için çoktan seçmeli ve açık uçlu 36 sorudan oluşan anket formu yüz yüze görüşmelerle uygulandı.

**Bulgular:** Katılımcıların ortanca yaşı 27 yıl idi. Yarından fazlası (%57,4) ilkokuldan mezun olmuş veya eğitim görmemişti, %89'u çalışmıyordu. Katılımcıların çoğunluğu tarama testlerini (%92,1) ve destek tedavilerini (%93,9) bildiklerini belirtti. Sırasıyla, tarama testlerinin ve destek tedavilerinin %48,1'i ve %44'ü kadın doğum uzmanlarından öğrenilmişti. Tarama testlerini yaptırmayı istemeyen katılımcıların %57,6'sının belirttiği sebep "Gereksiz buluyorum, çünkü hamileliğimi sonlandırmak istemiyorum" idi. Yirmi yedi yaş ve üstü ( $p=0,021$ ), en az liseden mezun olmuş ( $p=0,016$ ), çalışan ( $p=0,041$ ) ve primipar ( $p<0,001$ ) olan katılımcılar tarama testlerini belirgin olarak daha fazla bildiğini ifade etmişti.

**Sonuç:** Çalışma sonuçları tarama testleri ve destek tedavileri hakkında gebelerin farkındalıklarının anne yaşı, eğitim düzeyi, çalışma durumu ve doğum sayısı arttıkça arttığını göstermekteydi. Sağlık çalışanlarından tarama testleri ve destekleyici tedaviler hakkında bilgi edinme yüzdesi daha yüksek olmasına rağmen, hala istenen düzeyde değildi. Bu nedenle, sağlık çalışanları doğum öncesi bakım hizmetleri sırasında, özellikle kırsal alanlarda yaşayan genç ve düşük eğitimli anneler için bilgilendirme ve danışmanlık konusunda daha duyarlı olmalılar kanaatindeyiz.

**Anahtar Kelimeler:** Doğum öncesi bakım, tarama testleri, destek tedavileri, gebelik



**Address for Correspondence/Yazışma Adresi:** Ruğuşen Kutlu MD, Necmettin Erbakan University Meram Faculty of Medicine, Department of Family Medicine, Konya, Turkey  
Phone: +90 532 292 88 33 E-mail: ruhuse@yahoo.com ORCID ID: orcid.org/0000-0002-8502-0232

**Cite this article as/Atif:** Kutlu R, Uzun L, Karaođlu N, Görkemli H. Awareness of Pregnant Women About Routine Applied Screening Tests and Supportive Treatments in a University Hospital. Istanbul Med J 2020; 21(1): 71-7.

©Copyright 2020 by the İstanbul Training and Research Hospital/İstanbul Medical Journal published by Galenos Publishing House.

©Telif Hakkı 2020 İstanbul Eğitim ve Araştırma Hastanesi/İstanbul Tıp Dergisi, Galenos Yayınevi tarafından basılmıştır.

**Received/Geliş Tarihi:** 24.07.2019  
**Accepted/Kabul Tarihi:** 13.12.2019

## Introduction

Complications in pregnancy, birth, and puerperium in developing countries are the leading causes of morbidity and mortality among women of reproductive age. According to the “National Maternal Mortality Study” data of the Ministry of Health in our country, 25.5% of maternal deaths during this period were due to not receiving any prenatal care (PNC), and 23.6% were due to receiving low-quality PNC (1). With the implementation of sufficient and qualified PNC services, the maternal mortality rate dropped to 14.7 in 2016 from 64 in 2002 per hundred thousand live births, and the infant mortality rate dropped to 7.3 in 2016 from 31.5 in 2002 per thousand (2).

PNC is the follow-up of the fetus and mother by trained health personnel at regular intervals during pregnancy by making necessary examinations and making recommendations in order to ensure that mothers have a healthy pregnancy and deliver their babies in a healthy way (3). In the PNC management guide created by the Ministry of Health, examinations, measurements, tests, and consultancy services that need to be performed during at least four follow-ups are defined, including one within the first 14 weeks, at 18-24<sup>th</sup> weeks, 30-32<sup>nd</sup> weeks and 36-38<sup>th</sup> weeks (2).

Periodic checks and screening tests during pregnancy allow early detection of high-risk pregnancies (4). In addition to the dual screening test on the 11<sup>th</sup>-14<sup>th</sup> week of pregnancy, ultrasonography (US) examination performed on the same day measures the nuchal thickness of the fetus and the presence of nasal bone. The triple screening tests are performed during the 16<sup>th</sup>-18<sup>th</sup> week of pregnancy (5,6). The detailed US is evaluated by experienced physicians at 18-23<sup>rd</sup> weeks (7). Gestational diabetes screening is held between 24-28<sup>th</sup> weeks. However, these tests should be performed in the first trimester in pregnant women with a history of gestational diabetes, macrosomic baby (>4.500 gr at birth), polyhydramnios, anomaly, unexplained fetal or newborn death, diabetes in close relatives, and pregnant women with a body mass index of  $\geq 30$  kg/m<sup>2</sup> (8,9).

Within the framework of the “neonatal tetanus elimination program”, the first dose of the tetanus vaccine is applied at the 4<sup>th</sup> month of pregnancy or in the first encounter, and the second dose at least four weeks after the second dose (2,7). During pregnancy, which is an anabolic process, energy, vitamin, and mineral needs increase. For this reason, folic acid, iron, and vitamin D supplements are recommended to each pregnant woman by the Ministry of Health (10).

In our country, the level of knowledge about the pregnancies of expectant mothers and the sources from which they obtained this information are quite limited. However, it is thought that wrong or incomplete information negatively affects the view of pregnant women to screening tests and supportive treatments. For this reason, primary healthcare professionals have essential duties.

In this study, we aimed to evaluate the awareness of pregnant women about routine screening tests and supportive treatments in a university hospital and the factors affecting this.

## Methods

All pregnant women who applied to Necmettin Erbakan University Meram Faculty of Medicine outpatient clinics for the first time between

15 April 2018 and 30 November 2018 or who were still in the follow-up and who agreed to participate in the study were included in this observational and descriptive study.

Since it was not known how many pregnant women would come and agree to participate in the study with the random sampling method since it was a cross-sectional study, it was assumed that the number of individuals in the universe was unknown, so it was planned to reach at least 377 pregnant women with 5% margin of error and 95% confidence interval (CI), and it was planned to include at least 414 people in the study by adding 10% to this number due to the possibility of not filling the survey questions. In keeping with the planned date range, 493 voluntary pregnant women were included. Also, the prevalence of the event was unknown since the subject being studied was not a clinical condition. According to the size of the sample determined by random sampling in this way, a pregnant applying to the outpatient clinic was a part of the universe.

The questionnaire form prepared by the researchers was applied to ten pregnant women, and the questionnaire form was finalized after the necessary corrections were made to the questions. A 36-item questionnaire was filled with face-to-face interviews, including questions aimed at obtaining socio-demographic information such as age, profession, education level, age of spouse, education status of spouse, kinship status, smoking, previous pregnancy and questions about birth process if they had given birth, knowledge about the screening tests given in options, source of this information, questions about their current pregnancy, and the recommended screening and supportive treatments (folic acid, multivitamin, vitamin D, and iron supplement) and the attitudes of pregnant women to these. One of these questions is open-ended, and it is about the reason for not wanting a screening test. Answers to this question are categorized, as “I find it unnecessary because I do not want to end my pregnancy”, “I think it will harm the baby”, “I do not want to have a triple test because the double test is normal”, “It could not be done because the time to be done has passed” and “I do not find it reliable”.

The ethical permission of the study was taken before the study, with the number of 2018/1259, dated 16.03.2018, from the Ethics Committee of Necmettin Erbakan University Meram Faculty of Medicine, Pharmaceuticals and Non-medical Researches Ethics Committee. The participants were informed about the study, and their written and verbal consents were obtained according to the Helsinki Declaration principles.

## Statistical Analysis

While evaluating the findings obtained in the study, SPSS for Windows 21.0 was used for statistical analysis. Frequency, mean, standard deviation, median, minimum, and maximum values were calculated. In the comparison of categorical data, a chi-square test was used. Results were evaluated at a 95% CI and significance level at  $p < 0.05$ .

## Results

The mean age of 493 pregnant women aged 16-47 years who participated in the study was  $27.6 \pm 5.8$  years (median age: 27). Two hundred and

eighty-three (57.4%) had primary education or less, 89.0% (n=439) were unemployed and 11.4% (n=56) were relatives with her spouse. While 7.1% (n=35) of women stopped smoking when they learned about pregnancy, 3.3% (n=16) continued to smoke. Various socio-demographic data of the participants are shown in Table 1.

Regarding first control, 46.5% of pregnant women (n=229) applied to a state hospital, 19.7% (n=97) to a private clinic/private hospital, 17% (n=84) to a university hospital, and 14.8% (n=73) to a family health center. The mean gestational age was 22.8±10.2 weeks (median: 22 weeks). The vast majority of pregnant women (n=474, 96.1%) conceived

naturally and 36.1% (n=178) were nulliparous. Four hundred and sixty-two (93.7%) women included in the study stated that they applied to the family physician they were affiliated with. When the health problems arose during pregnancy were examined, seven had hypertension, 18 had diabetes, 12 had thyroid disease, 27 had anemia, and 18 had a clotting disorder.

The majority of participants (n=454, 92.1%) stated that they knew the screening tests. When the source of information was asked to women who knew about screening tests, 52% (n=236) stated that they learned from gynecology and obstetrician, 14.5% (n=66) from a family physician, and 32.4% (n=147) from experience from a previous pregnancy. Table 2 shows the state of knowing screening tests and supportive treatments.

The most common test (n=445, 90.3%) that the pregnant women participating in the study had or asked to have was the detailed US. Table 3 shows the status of having/not having screening tests done. When women that did not want to have screening tests were asked for the reason, 57.6% (n=208) of the participants answered as "I find it unnecessary because I do not want to end my pregnancy", 19.4% (n=70) as "I think it will harm the baby", 10% (n=36) as "I do not want to have a triple test because the double test is normal", 7.8% (n=28) as "It could not be done because the time to be done has passed", and 1.9% (n=7) as "I do not find it reliable".

The relationship between the knowledge of the screening tests and educational level, age, working status, education level of the spouse, number of pregnancies, and birth status were statistically examined.

**Table 1. Socio-demographic features of participants**

Parameters	n	%
<b>Age</b>		
<27 years	260	52.7
≥27 years	233	47.3
<b>Education status</b>		
≤ Primary education	283	57.4
≥ High school	210	42.6
<b>Employment status</b>		
Unemployed	439	89.0
Employed	54	11.0
<b>Education status of spouse</b>		
≤ Primary education	247	50.1
≥ High school	246	49.9
<b>Employment status of spouse</b>		
Tradesman/self-employed	158	32.1
Officer	76	15.4
Worker	259	52.5
<b>Kinship status with spouse</b>		
There is kinship	56	11.4
No kinship	437	88.6
<b>Place of residence</b>		
Konya center	364	73.8
District and villages	129	26.2
<b>Smoking status</b>		
Never smoked	432	87.6
She quitted when she learned about her pregnancy	35	7.1
She quitted before pregnancy	10	2.0
Still smoking	16	3.3

**Table 2. Knowledge about the screening tests and supportive treatments**

Parameters	Knows		Does not know	
	n	%	n	%
<b>Screening tests in pregnancy</b>	<b>454</b>	<b>92.1</b>	<b>39</b>	<b>7.9</b>
Double screening test	419	85.0	74	15.0
Triple screening test	414	84.0	79	16.0
Glucose challenge test	405	82.2	88	17.8
Detailed ultrasonography	401	81.3	92	18.7
<b>Supportive treatments during pregnancy</b>	<b>463</b>	<b>93.9</b>	<b>30</b>	<b>6.1</b>
Folic acid supplement	393	79.7	100	20.3
Multivitamin supplement	258	52.3	235	47.7
Iron supplement	345	70.0	148	30.0
Vitamin D supplement	355	72.0	138	28.0
Vaccines during pregnancy	352	71.4	141	28.6

**Table 3. Screening tests and tetanus vaccination status**

Parameters	I want/I had		I want/I will have		I do not want/I did not have	
	n	%	n	%	n	%
Double screening test	206	41.8	75	15.2	212	43.0
Triple screening test	115	23.3	112	22.7	266	54.0
Glucose challenge test	112	22.7	152	30.8	229	46.5
Detailed ultrasonography	226	45.9	219	44.4	48	9.7
Tetanus vaccine	278	56.4	193	39.1	22	4.5

Awareness of screening tests was found to be statistically significantly higher in patients aged 27 years or older ( $p=0.021$ ), with high school or more education ( $p=0.016$ ), employed ( $p=0.041$ ), and those who had given birth before ( $p<0.001$ ) (Table 4).

The majority of the participants ( $n=463$ , 93.9%) stated that they knew supportive treatments. Information sources for screening tests and supportive treatments are shown in Table 5. Among the supportive treatments, the highest awareness was found in vaccines during pregnancy. Four hundred and seventy-one women (95.5%) participating in the study stated that they had the vaccines during pregnancy or wanted to have them. Table 6 shows other recommended therapies and the usage status of them. Three hundred and forty-two (69.4%) women answered the question, "Should the family physician play an effective role at the community level in promoting supportive treatment during pregnancy?" as "I totally agree".

## Discussion

Mothers having a healthy pregnancy and the birth of healthy babies are the cornerstones of public health. For this reason, screening tests and supportive treatments, which are among the components of PNC, are critical. In our study, we examined the factors that affect the compliance of screening tests and supportive treatments applied to the expectant mothers who applied to the pregnancy clinic of our hospital and the factors that affect their compliance, if any.

While the highest fertility rate in our country was in the 20-24 years age group in previous studies, it was observed in the 25-29 years age group in Turkey Demographic and Health Survey (TDHS)-2013. This result indicates that pregnancies are delayed to the advanced ages in Turkey

(11). Similarly, the median age of mothers was found to be 27 years in our study. According to the TDHS-2013 report, 81% of women were living in urban areas, 44% of women in the 25-29 years age group and 18% of women in the 45-49 years age group were at least high school graduates, and 31% of women were employed during the study (11). Similarly, in our study, 73.8% of the participants lived in the city center of Konya, and 49.9% of them had high school and above education. Unlike the TDHS report, in our study, 89% of pregnant women were housewives, and only 11% were employed.

According to the 2016 Turkish Statistical Institute data, rates of consanguineous marriage in our country is 23.2% (12). In our study, the rate of consanguineous marriage was found to be 11.4%. Although this result is evaluated as a positive development for our country, it is necessary to know that the study sample and the place where the study was conducted may also be effective in this difference.

Smoking during pregnancy increases risks such as miscarriage, premature birth, low birth weight, and sudden infant death, causing severe harm. In our study, 87.6% of the participants stated that they did not smoke at all, 2% stated that they quitted before pregnancy, 7.1% stated that they quitted when they learned their pregnancy, and 3.3% stated that they were still smoking. In studies conducted in England and Scotland, it was reported that one in four women smoked before or during pregnancy, and one in eight women continued smoking during their pregnancy. In a study conducted in Romania, it was reported that 30% of the interviewed mothers were smoking before pregnancy and that 43.3% of them continued smoking during pregnancy (13,14). In a study conducted with 513 pregnant women in Italy, 22.3% of the participants continued to smoke during their pregnancy and claimed that they

**Table 4. Knowledge about the screening tests and related factors**

	Knowledge about the screening tests in pregnancy					
	Yes		No		$\chi^2$	p
	n	%	n	%		
<b>Education status</b>						
≤ Primary education	253	89.4	30	10.6	5.761	0.016
≥ High school	201	95.7	9	4.3		
<b>Age</b>						
<27 years	232	89.2	28	10.8	5.368	0.021
≥27 years	222	95.3	11	4.7		
<b>Employment status</b>						
Unemployed	401	91.3	38	8.7	4.176	0.041
Employed	53	98.1	1	1.9		
<b>Employment status of spouse</b>						
≤ Primary education	223	90.3	24	9.7	1.747	0.186
≥ High school	231	93.9	15	6.1		
<b>Number of pregnancies</b>						
≤2	247	89.9	28	10.2	3.726	0.054
>2	207	95.0	11	5.0		
<b>Delivery status</b>						
No	152	85.9	25	14.1	13.334	<0.001
Yes	302	95.6	14	4.4		

**Table 5. Information sources for screening tests and supportive treatments in pregnancy\***

Parameters	n	%
<b>Information sources for screening tests</b>		
<b>Previous pregnancy</b>		
Yes	147	32.4
No	307	67.6
<b>Family physician</b>		
Yes	66	14.5
No	388	85.5
<b>Obstetrician</b>		
Yes	236	52.0
No	218	48.0
<b>Internet/social media</b>		
Yes	34	7.5
No	420	92.5
<b>Printed media/TV</b>		
Yes	2	0.4
No	452	99.6
<b>Other (mother, relatives, etc.)</b>		
Yes	27	5.9
No	427	94.1
<b>Information source for supportive treatments</b>		
<b>Previous pregnancy</b>		
Yes	138	29.8
No	325	70.2
<b>Family physician</b>		
Yes	170	36.7
No	293	63.3
<b>Obstetrician</b>		
Yes	216	46.7
No	247	53.3
<b>Internet/social media</b>		
Yes	20	4.3
No	443	95.7
<b>Printed media/TV</b>		
Yes	2	0.4
No	461	99.6

\*Participants gave multiple answers to these questions, TV: television

continued smoking during their pregnancy because they received very little information about this subject during their examination (15). Pirdal et al. (16) reported that 79.4% of pregnant women never smoked in their lives, 18.1% stopped smoking during pregnancy, and only 2.5% continued smoking during pregnancy. These examples in the literature highlight the importance of providing more information about the risks of smoking in pregnancy during PNC, as women planning pregnancy and currently pregnant women are a high priority target group for smoking cessation interventions.

In our study, 93.7% of the pregnant women stated that they admitted to the family physician they were affiliated with, and 46.5% stated that they admitted to the state hospital for the first examination. In the study of Kurnaz et al. (17), 94.0% of the participants stated that they had a pregnancy record in the family physician, and 43.4% stated that they went to the family health center for the first control. In the study conducted by Durusoy et al. (18) in Izmir, the rate of pregnant women who were followed up by the family physician was 85%, and the place for first control was state hospital with a rate of 33.2%. We think that this may be due to the idea that pregnant women apply to hospitals in order to learn the baby's gender or that they believe they should be examined by an obstetrician, even if the pregnancy is not risky at all.

In our study, the participants stated that they had or they wanted to have a double test (57%), triple test (46%), glucose challenge test (53.5%), and detailed US (90.3%) performed. In the study of Potur et al. (19), it was reported that 70.3% of the pregnant women had a glucose challenge test, 59.5% had a double test, and 48.6% had a triple test. In the study conducted by Desdicioğlu et al. (20), 72.25% of the pregnant women stated that they had or wanted to have all screening tests. In the study of Bilgin et al. (21), out of 300 pregnant women, 192 answered yes to only triple, 20 only to double, and 41 to both to the question whether they had any screening test during pregnancy.

In our study, the source of information was obstetricians in 52% of pregnant women, family physicians in 14.5%, internet/social media in 7.5%, and experience from previous pregnancy in 32.4%. In the study of Ruhat Karakuş, the answers given to the question of "where did you learn the double or triple screening test?" were "my physician recommended" (86.5%), "I learned from the internet" (8.1%), "my friends recommended" (2.7%), "I learned from TV or newspaper" (2.7%) (22).

In our study, the awareness of pregnant women about screening tests was found to be significantly higher in those who were 27 years of age and older, who had high school and above education, who were employed and who gave birth before. Unlike our study, the mean age of pregnant women who knew the double and triple tests was found to be

**Table 6. Suggestion and usage status of supportive treatments**

Parameters	Recommended I used		Recommended I am using		Recommended I will use		Recommended I do not want		Not recommended	
	n	%	n	%	n	%	n	%	n	%
Folic acid supplement	283	57.4	113	22.9	15	3.0	10	2.0	72	14.6
Multivitamin supplement	122	24.7	135	27.4	29	5.9	7	1.4	200	40.6
Iron supplement	129	26.2	159	32.3	43	8.7	5	1.0	157	31.8
Vitamin D supplement	150	30.4	179	36.3	38	7.7	6	1.2	120	24.3



lower in the study of Desdicioğlu et al. (20). In the study of Pirdal et al. (16), two independent factors affecting the knowledge level of pregnant women were found to be the education level and age. In the study of Bilgin et al. (21), the rate of obtaining information about screening tests and the level of the evaluation were increasing as the level of education increased; however, the increase in the parity seemed to decrease these. Increased awareness with age was considered to be related to the increasing number of births and information learned from previous pregnancies. Increasing awareness with education level may be the result of education facilitating learning and understanding in general.

When women that did not want to have screening tests were asked for the reason, 57.6% (n=208) of the participants answered as "I find it unnecessary because I do not want to end my pregnancy", 19.4% (n=70) as "I think it will harm the baby", 10% (n=36) as "I do not want to have a triple test because the double test is normal", 7.8% (n=28) as "It could not be done because the time to be done has passed", and 1.9% (n=7) as "I do not find it reliable". When the participants were asked about the reasons for not wanting prenatal tests in the study by Lewis et al. (23), they stated that the participants responded as "ending pregnancy is not an option" and "invasive tests increase the risk of miscarriage", which are mostly based on opinions and moral values. Desdicioğlu et al. (20) stated that 75% of the pregnant women telling that they would not have/did not have the diabetes screening test stated that they heard from the media that the test was harmful. In the same study, the most common reasons for not having double and/or triple tests were "finding the tests unnecessary" (54.7%) and "missing the time of the test" (35.7%). Although the majority of the participants stated that they knew the screening tests, the rate of pregnant women who stated that they did not have the tests due to any missing or wrong information, avoiding the risk of harm to the baby, and moral values was found to be high.

According to the Turkey Nutrition and Health Survey 2010 data, the most widely used nutritional supplement during pregnancy is iron (43.5%), followed by multivitamin/mineral (27.1%), folic acid (15.1%), and vitamin D (5.7%) (24). In our study, the participants stated using folic acid (83.4%), vitamin D (74.5%), iron (67.2%), and multivitamin (58%).

In our study, 95.5% of the pregnant women stated that the tetanus vaccine was/would be administered. In the study of Kurnaz et al. (17), 73.6% of the participants had a tetanus vaccine, and the remaining participants stated that they did not get a tetanus vaccine because they were fully vaccinated. Tetanus vaccine was administered to 71.2% of the pregnant women in the study of Çatak et al. (25) and 77.6% of the pregnant women in the study of Ergün et al. (4).

The results of the use of supportive treatments in the presented study were found to be compatible with the literature. In other studies, it was found that the pregnant women received more adequate and qualified PNC as the age of the mothers, the level of education, the number of births, and the rate of living in the urban area increased (26,27). It is known that as the awareness of healthcare professionals and information and consultancy services provided to pregnant women increase, their compliance with screening tests and supportive treatments increases (28).

## Conclusion

In this study, it was found that awareness about screening tests and supportive treatments increased with increased maternal age, education level, number of births, and the employment status of the mother. Although we have found high rates of learning screening tests and supportive treatments from healthcare professionals, it is a pity that all pregnant women are not contacted, and PNC is not at the desired level. We can say that this result refers primarily to the family physicians, who are the first point of contact with pregnant women, and to the healthcare professionals in the services and information of PNC. We think that younger mothers with lower education levels in rural areas should be prioritized for information about counseling during the PNC services.

The most important limitation of the study was that the study was conducted in a tertiary healthcare institution. Therefore, there is a possibility that some of the participants were pregnant women who were referred to due to more problematic pregnancy processes. However, we can say that the absence of a referral chain in our country is a situation that eliminates this bias. Nevertheless, extensive studies in primary care are needed to cover the general population. Although the results of the study cannot reflect the general public, we believe that it is a study that can contribute to the literature and contribute to the future studies with the awareness of pregnant women about routine screening tests and supportive treatments and the possible role of family physicians in this regard.

**Ethics Committee Approval:** The ethical permission of the study was taken before the study, with the number of 2018/1259, dated 16.03.2018, from the Ethics Committee of Necmettin Erbakan University Meram Faculty of Medicine, Pharmaceuticals and Non-medical Researches Ethics Committee.

**Informed Consent:** The participants were informed about the study, and their written and verbal consents were obtained according to the Helsinki Declaration principles.

**Peer-review:** Externally peer-reviewed.

**Author Contributions:** Concept - R.K.; Design - R.K., L.U., N.K., H.G.; Data Collection and/or Processing - L.U., H.G.; Analysis and/or Interpretation - R.K., L.U., N.K.; Literature Search - N.K., L.U.; Writing Manuscript - R.K., L.U.

**Conflict of Interest:** No conflict of interest was declared by the authors.

**Financial Disclosure:** The authors declared that this study received no financial support.

## References

1. Ulusal Anne Ölümleri Çalışması Ana Raporu, Hacettepe Üniversitesi Nüfus Etütleri Enstitüsü, Türkiye Üreme Sağlığı Programı, Ankara, 2005. Erişim tarihi: 10.04.2019. [http://www.hips.hacettepe.edu.tr/uaooc\\_ana\\_rapor.pdf](http://www.hips.hacettepe.edu.tr/uaooc_ana_rapor.pdf).
2. Doğum Öncesi Bakım Yönetim Rehberi, T.C. Sağlık Bakanlığı Türkiye Halk Sağlığı Kurumu, Ankara, 2018. Erişim tarihi: 18.04.2019. <https://sbu.saglik.gov.tr/Ekutuphane/Home/GetDocument/466>
3. Akın A, Özvarış ŞB. Türkiye'de Doğum Öncesi Bakım Hizmetlerinden Yararlanma. Eds: Akın A. Türkiye'de Ana Sağlığı, Aile Planlaması Hizmetleri

- ve isteyerek Düşükler, Türkiye Nüfus ve Sağlık Araştırması-1998 İleri Analiz Sonuçları'nda. Ankara, Hacettepe Üniversitesi Türkiye Aile Sağlığı ve Planlaması Vakfı UNFPA; 2002.
4. Ergün P, Köken GN, Coşar E, Şahin FK, Arıöz DT, Yılmaz M. Gebelerin üçlü tarama testi ve gebelikte yapılan diğer testler hakkındaki bilgi düzeyinin ölçülmesi. TAF Preventive Medicine Bulletin 2011; 10: 403-8.
  5. Kuşucu AÇ. Fetal Kromozom Anomalisi Tarama Testleri. JOPP Derg 2010; 2: 55-60.
  6. Diribaş K, Kaya C, Koç FA. İlk trimester fetal tarama testleri. T Klin Jinekoloj Obst 2002; 12: 186-93.
  7. Arslan T, Yiğit AB. Gebelik takibinde güncel yaklaşımlar. The Journal of Turkish Family Physician 1999; 3: 1-13.
  8. Çakır E. Gestasyonel diabetes mellitus tanısı. Selçuk Tıp Derg 2014; 30: 39-41.
  9. Şen C, Yayla M, Apı O, Eyi EGY, Ülkümen BA; Türk Perinatoloji Derneği Diyabet ve Gebelik Çalışma grubu. Gebelikte diyabet: Tanı ve tedavi. Türk Perinatoloji Derneği Uygulama Rehberi. Perinatal Journal 2016; 24: 110-27.
  10. Coskun A, Özdemir Ö. Gebelikte Vitamin-mineral kullanımı ve beslenmenin irdelenmesi. Journal of Turkish Society of Obstetrics and Gynecology 2008; 6: 155-70.
  11. Türkiye Nüfus ve Sağlık Araştırması 2013. Hacettepe Üniversitesi Nüfus Etütleri Enstitüsü, Ankara, 2014. Erişim tarihi: 03.05.2019. [http://www.hips.hacettepe.edu.tr/tnsa2013/rapor/TNSA\\_2013\\_ana\\_rapor.pdf](http://www.hips.hacettepe.edu.tr/tnsa2013/rapor/TNSA_2013_ana_rapor.pdf)
  12. İstatistiklerle Aile Sonuçları, 2016. (2017, Mayıs) Türkiye İstatistik Kurumu Haber Bülteni, 24646. Erişim tarihi: 05.05.2019. <http://www.tuik.gov.tr/PreHaberBultenleri.do?id=24646>
  13. Bauld L, Graham H, Sinclair L, Flemming K, Naughton F, Ford A, et al. Barriers to and facilitators of smoking cessation in pregnancy and following childbirth: literature review and qualitative study. Health Technol Assess 2017; 21: 1-158.
  14. Ruta F, Avram C, Voidăzan S, Mărginean C, Bacărea V, Ábrám Z, et al. Active smoking and associated behavioural risk factors before and during pregnancy - prevalence and attitudes among newborns' mothers in mures county, Romania. Cent Eur J Public Health 2016; 24: 276-80.
  15. Esposito G, Ambrosio R, Napolitano F, Giuseppe GD. Women's Knowledge, Attitudes and behavior about maternal risk factors in pregnancy. PLoS One 2015; 10: 1-12.
  16. Pirdal H, Yalçın BM, Ünal M. Gebelerin gebelik izlemeleri, gebelikleri ile ilgili bilgi düzeyleri ve etkileyen faktörler. Türk Aile Hekimliği Dergisi 2016; 20: 7-15.
  17. Kurnaz MA, Can H, Sezik HA, Çakır YT, Tuna M, Ay Z. Aile hekimleri gebeleri ne kadar ve nasıl izliyor? Türk Aile Hekimliği Dergisi 2015; 19: 187-95.
  18. Durusoy R, Davas A, Ergin I, Hassoy H, Tanık FA. İzmir'de ikinci ve üçüncü basamak sağlık kuruluşlarına başvuran gebelerin aile hekimi tarafından izlenme sıklıkları ve etkileyen etmenler. Türkiye Halk Sağlığı Dergisi 2011; 9: 1-15.
  19. Potur DC, Yiğit F, Bilgin NÇ. Anne adaylarının fetal sağlığı değerlendiren testlere yaklaşımının kalitatif incelenmesi. Maltepe Üniversitesi Hemşirelik Bilim ve Sanatı Dergisi 2009; 2: 80-92.
  20. Desdicioğlu R, Yıldırım M, Süleymanova İ, Atalay İ, Özcan M, Yavuz AF. Gebe kadınların antenatal testlere yaklaşımını etkileyen faktörler. Ankara Med J 2017; 57-64.
  21. Bilgin S, Bildircin FD, Alper T, Tosun M, Çetinkaya MB, Çelik H, et al. Gebelikte uygulanan tarama testlerinin anne anksiyetesine olan etkisi. Journal of Turkish Society of Obstetrics and Gynecology 2010; 7: 206-11.
  22. Karakuş R. Gebelerin ikili ya da üçlü testler hakkındaki bilgi düzeyinin araştırılması. Jinekoloji-obstetrik ve Neonatoloji Tıp Dergisi 2015; 12: 174-8.
  23. Lewis C, Hill M, Silcock C, Daley R, Chitty LS. Non-invasive prenatal testing for trisomy 21: A cross-sectional survey of service users' views and likely uptake. BJOG 2014; 121: 582-94.
  24. Türkiye Beslenme ve Sağlık Araştırması 2010: Beslenme Durumu ve Alışkanlıklarının Değerlendirilmesi Sonuç Raporu. Ankara, 2014. Erişim tarihi: 18.04.2019. <https://www.saglik.gov.tr/TR,4736/turkiye-beslenme-ve-saglik-arastirmasi-2010-yayinlandi.html>
  25. Çatak B, Aksan AD, Zincir M. Karabük toplum sağlığı merkezi bölgesinde doğum öncesi bakım hizmetlerinin nicelik ve niteliği. TAF Preventive Medicine Bulletin 2012; 11: 153-62.
  26. Pirinçi E, Polat A, Kumru S, Köroğlu A. Bir üniversite hastanesinde doğum yapan kadınların doğum öncesi bakım alma durumu ve etkileyen faktörler. ADÜ Tıp Fakültesi Dergisi 2010; 11: 1-7.
  27. Turan T, Ceylan SS, Teyikçi S. Annelerin düzenli prenatal bakım alma durumları ve etkileyen faktörler. Fırat Sağlık Hizmetleri Dergisi 2008; 3: 157-72.
  28. Koçak V, Ege E. Prenatal tarama testi uygulanan gebelerin kaygı düzeyi ve ilişkili faktörler. Genel Tıp Dergisi 2016; 26: 113-20.