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Factors affecting women's access to antenatal care services

Ülkü Ayşe TÜRKER ARAS [1,*], Samet KIRAT[2], Engin KORKMAZER[3]

[1] Department of Obstetrics and Gynecology, Kars Harakani State Hospital, Kars, Türkiye
[2] Department of Obstetrics and Gynecology, Kafkas University, Kars, Türkiye
[3]Department of Obstetrics and Gynecology, Esentepe State Hospital, , Bursa, Türkiye

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Abstract

The aim of this study was to quantitatively investigate the antenatal care provided by healthcare physicians in a rural area of North East Anatolia, Turkey, and the effective factors. Patients who applied to a Second-tier health institution for delivery were asked how many times they went for a check-up during their pregnancy. In addition, the sociodemographic characteristics of the responding patients were recorded. In this study, the rate of pregnant women who received inadequate antenatal care was 41.0%. Examining the risk factors for inadequate antenatal care in pregnant women who attended fewer than four antenatal care visits revealed that the risk was 2,115 (confidence interval [CI] = 1.328–3.368) times higher for those receiving spousal education for <5. Longer years than those with ≥6 years of partner training. Pregnant women who received inadequate antenatal care in the North East Anatolia region preferred to visit Secondary and Tertiary healthcare institutions instead of visiting primary care physicians. In conclusion, it is necessary to establish a referral chain through health plans and expand Primary antenatal care services to reduce both maternal and neonatal mortality and morbidity.

Keywords: antenatal care, pregnant, infant mortality, health service delivery, health personnel

1. Introduction

In the most general sense, the prenatal care is a series of regular contact between a healthcare provider and a pregnant woman at scheduled intervals from the confirmation of pregnancy to the onset of childbirth (1) Prenatal care provides routine pregnancy examinations along with training, counseling, and treatment services (2). These services are to ensure early intervention through adequate prenatal care and to address the complications that may occur in the mother and baby during pregnancy. In addition, these services aim to decrease maternal and neonatal mortality and morbidity (3).

In Maternal and Neonatal Care Standards, the World Health Organization (WHO) recommends prenatal care for minimum four times for every pregnant woman (1,2) In Turkey, the Ministry of Health set the standards of the adequate prenatal care services pursuant to the circular issued in 2008. Accordingly, the pregnant women should receive prenatal care at least 4 times (4).

In relevant international literature, considerations related to prenatal care services are largely aligned with the Kessner Index. This index refers to the timing of the onset of prenatal care and classifies the care as weak, medium, or adequate (5). Certain Turkish studies suggested that the prenatal care should be introduced as early as in the first 3 months of pregnancy and should be continued at regular intervals by a healthcare professional. Furthermore, these studies suggested that fewer than 5 follow-up visits would be considered insufficient (6).

However, both the Kessner Index and the assessments related to prenatal care services in Turkey are incomplete when assessing their quality. However, it is imperative to note that these assessments not make a distinction in terms of providing tier-based healthcare services. The aim of this study is to investigate the numerical adequacy of antenatal care and to examine the factors that affect the provision of adequate prenatal care.

2. Material and Methods

2.1. Study area

The present study was performed in a province in the North East Anatolia region. The study region had relatively lower levels of income, with the low and very low welfare levels of 16.6% and 51.6%, respectively. Furthermore, the average durations of education for women and men were 4.4 and 5 years, respectively. In this region, agriculture and animal husbandry are the main sources of livelihood (7).

*Correspondence: ulku1ayse@gmail.com

2.2. Type of study
Hospital-based cross-sectional study

2.3. Study population
The hospital records from the year 2020 were used to determine the study population. The number of pregnant women who gave birth in 2020 was 2183. The number of births in 2021 was predicted to be identical to that in 2020; thus, the study population was considered as 2183.

2.4. Study sample
The number of people included in the sample was calculated using the following formula: n = Nt2 p q / d2 (N − 1) + t2 p q. Herein, "N" is the number of individuals in the population, "n" is the number of individuals to be included in the sample, "p" is the frequency (probability) of occurrence of the event in question, "q" is the frequency (probability) non-occurrence of the event in question, "t" is the theoretical value in the t table with a certain degree of freedom and a certain level of error, and "d" is the ±deviation from the frequency of the event.[8] Accordingly, the sample size was calculated as 327 participants based on p, q, t, and d values of 0.50, 0.50, 1.96, and 0.05, respectively.

2.5. Verbal/written consent and ethics committee approval
The required ethics committee approval was obtained from the Ethics Committee of Faculty of Medicine, Kafkas University (Approval number: 80576354-050-991/ 38; date: dated 31.03.2021). In addition, written approval of the hospital administration and written and verbal consents of the patients were obtained before collection of the study data. The study was conducted in accordance with the Declaration of Helsink Structuring the data collection form: The data collection form was prepared by the researchers upon a literature review.

2.6. The dependent variable of the study
The dependent variable was the number of prenatal care services that the pregnant women received from the First-tier healthcare institutions. In Turkey, it is legally required to receive at least 4 prenatal care services during pregnancy. Therefore, receipt of fewer than 4 prenatal care services was considered inadequate in the study (5,6).

2.7. Independent variables of the study
The sociodemographic characteristics of the pregnant women.

2.8. Preliminary application of the study
Preliminary application was performed with 5 women who gave birth but were not included in the study. Required adjustments were made to the data collection form upon the preliminary application.

2.9. Selection of the individuals included in the study and collection of data
Data were collected through in-person interviews between January and June 2021. The data were collected by an obstetrician and a gynecologist.

2.10. Statistical analysis
The Chi-squared test was used for binary analyses. The statistically significant variables as confirmed by the Chi-squared test ($p < 0.05$) were tested by the Backward Likelihood Ratio (LR) logistic regression analysis.

3. Results
In the study, 41.0% women received inadequate prenatal care. The average age of women included in the study was 28.7 ± 2.59 years. The factors for receiving an inadequate number of prenatal care services at the First-tier healthcare institutions are shown in Table 1. The Chi-squared test was conducted with the data. Upon binary comparisons, statistical differences were observed in the adequacy of received prenatal care services according to the regions where the study participants resided ($p = 0.041$), women's level of education ($p = 0.034$), the partner's level of education ($p < 0.001$), type of woman's marriage ($p = 0,021$), and number of pregnancies ($p = 0,017$). However, binary comparisons revealed that there were no significant differences in the adequacy of received prenatal care services in terms of the women's age ($p = 0.355$), the partner's age ($p = 0.147$), employment status of the women ($p = 0.684$), and employment status of the partner ($p = 0.464$), the health insurance of the women ($p = 0.074$), the total income of the household ($p = 0.784$), the family type ($p = 0.972$), the number of individuals living in the house ($p = 0.348$), official marital status ($p = 0.164$), kinship with the partner ($p = 0.544$), and the woman's ($p = 0.836$) and her partner's desire for the pregnancy ($p = 0.244$) ($p > 0.05$).

The significant parameters associated with the receipt of adequate prenatal care services upon binary analyses were subject to logistical regression analysis. Table 2 shows the logistic regression analysis results table. Notably, among the pregnant women who received inadequate prenatal care services, the number of women who received less than 5-year partner education was 2.202 (CI = 1.389–3.491) times higher than the number of women who received partner education for ≥6 years.

4. Discussion
A literature review revealed the majority of countries determined the adequate or inadequate prenatal care service according to their specific conditions, but not pursuant to the criteria set by the World Health Organization (at least 4 prenatal care services). Although Turkish studies suggested that 4 prenatal care visits were quantitatively sufficient, according to the National Institute for Health and Care Excellence (NICE) 2021 recommendations, the nulliparous and multiparous women should receive 10 and 7 prenatal controls, respectively (9). Therefore, a quantitative comparison of prenatal care between different countries constitutes a confusing predicament.

In accordance with the Turkey Demographic and Health Survey of 2018 (TNSA), nearly 9 out of every 10 pregnant

women in Turkey received prenatal care. Furthermore, 93.6% of pregnant women received prenatal care from a physician. However, the TNSA 2018 did not specify the specialties of the physicians, who administered the required care. Furthermore, the TNSA 2018 reported the rate of women who underwent an ultrasonographical examination as 98.4% (9). Given that the ultrasonographical examination is performed by obstetricians and gynecologists in practice, the statistics in the TNSA 2018 are considered to have been based on the prenatal care services provided by the Second- and Third-tier healthcare institutions.

Table 1. Risk Factors for Inadequate Prenatal Care

Independent variables		Antenatal care		Total	X^2	P
		Insufficient	Sufficient			
		number (%)*	number (%)*	number (%)**		
Where the woman lives	Rural	73 (46,8)	83 (53,2)	156 (47,7)	4,173	**0,041**
	Urban	61 (35,7)	110 (64,3)	171 (52,3)		
Woman's age	19 ≤	16 (38,1)	26 (61,9)	42 (12,8)	2,073	0,355
	20-34	97 (39,8)	147 (60,2)	244 (74,6)		
	≥35	21 (51,2)	20 (48,8)	41 (12,5)		
Age of partner (median)	32 years and older	69 (37,5)	115 (62,5)	184 (56,3)	2,105	0,147
	31 years and under	65 (45,5)	78 (54,5)	143 (43,7)		
Women's education	5 years and below	75 (46,9)	85 (53,1)	160 (48,9)	4,504	**0,034**
	6 years and above	59 (35,3)	108 (64,7)	167 (51,1)		
Partner's education	5 years and below	64 (53,3)	56 (46,7)	120 (36,7)	11,964	**0,001**
	6 years and above	70 (33,8)	137 (66,2)	207 (63,3)		
Woman's job	formal sector	18 (43,9)	23 (56,1)	41 (12,5)	0,166	0,684
	İnformal sector	116 (40,6)	170 (59,4)	286 (87,5)		
Partner's job	formal sector	57 (38,8)	90 (61,2)	147 (45,0)	0,536	0,464
	İnformal sector	77 (42,8)	103 (57,2)	180 (55,0)		
Women's health insurance	No	13 (59,1)	9 (40,9)	22 (6,7)	3,199	0,074
	Yes	121 (39,7)	184 (60,3)	305 (93,3)		
Income from home	Insufficient	86 (41,5)	121 (58,5)	207 (63,3)	0,075	0,784
	Sufficient	48 (40,0)	72 (60,0)	120 (36,7		
Family type	Wide	69 (41,1)	99 (58,9)	168 (51,4)	0,001	0,972
	Core	65 (40,9)	94 (59,1)	159 (48,6)		
Person living at home	5 and above	84 (43,1)	111 (56,9)	195 (59,6)	0,879	0,348
	4 and below	50 (37,9)	82 (62,1)	132 (40,4)		
Way of marriage	by agreement	51 (34,0)	99 (66,0)	150 (46,0)	5,315	**0,021**
	by family request	83 (46,6)	94 (53,4)	177 (54,0)		
Civil marriage	No	14 (53,8)	12 (46,2)	26 (8,0)	1,934	0,164
	Yes	120 (39,9)	181 (60,1)	301 (92,0)		
Kinship with spouse	No	33 (44,0)	42 (56,0)	75 (22,9)	0,367	0,544
	Yes	101 (40,1)	151 (59,9)	252 (77,1)		
Number of pregnancies	1-2	64 (35,2)	118 (64,8)	182 (55,7)	5,736	**0,017**
	3 and above	70 (48,3,)	75 (51,7)	145 (44,3)		
The woman's desire for pregnancy	Yes	117 (41,2)	167 (58,8)	284 (86,9)	0,043	0,836
	No	17 (39,5)	26 (60,5)	43 (13,1)		
Man's desire for pregnancy	Yes	121 (40,1)	181 (59,9)	302 (92,4)	1,360	0,244
	No	13 (52,0)	12 (48,0)	25 (7,6)		
Total		**134 (41,0)**	**193 (59,0)**	**327 (100,0)**		

*row percent **column percent

Table 2. Logistic Regression analysis results table

Independent variables		**B**	**SE.**	**Wald**	**Odds Ratio**	**%95 CI* (EK-EB değer)****
Partner training	5≤	0,789	0,235	11,262	2,202	1,389-3,491
	≥6				1 (reference)	

*Confidence Interval **Minimum-Maximum value

A pre-pandemic study conducted in Sanliurfa province reported the rate of receiving adequate prenatal care as 80.6%. In the present study, 41% of pregnant women received inadequate care. The fact that the Sanliurfa province had a higher prenatal care rate compared to the present study despite it was one of the regions with the most inadequate prenatal care rate in Turkey may be attributable to the fact that women were apprehensive of visiting the hospital during the pandemic (9,10). The pregnant women limited themselves owing to the restrictions and out of fear of being infected during pandemic. In addition, the prenatal care services may also have been disrupted by the imposed curfews.

Indeed, 1,000 women die every day in the low and middle income countries because of preventable causes related to pregnancy. Therefore, providing all the pregnant women with prenatal care services is imperative (11). The Turkish field surveys reported that the rate of women who received ≥4 prenatal care services from the First-tier healthcare institutions varied between 53.3% and 71.9%. According to the same studies, the obstetricians and gynecologists administered ≥4 prenatal care services to approximately 9 out of 10 women. (12-14). To summarize, the quantity of prenatal care services at the First-tier healthcare institutions does not comply with the prescriptions of the Ministry of Health. The likely reason for this situation is the lack of tire-based healthcare provision (referral chain).

A review of the previous studies on prenatal care in Turkey indicated that the receipt of prenatal care increased with adequate income level and social health insurance. Nevertheless, there were no significant differences in the present study. We believe that this was attributable to the fact that the healthcare services were provided free of charge to pregnant women pursuant to today's healthcare policies and that all the women had the right to receive equal prenatal care (10, 15).

The logistic regression analysis results table is shown in Table 2. The rate of pregnant women who received inadequate prenatal care services was 2.202 (CI: 1,389–3,491) times higher in women who received partner training of 5 years education than in those who received partner training of ≥6 years. The binary analyses reported by the Turkish studies suggested that prenatal care services were inadequate in terms of quantity and quality when the partner had a lower level of education (12-14). The relevant international studies also reported that the partner's education level affected the levels of prenatal care in pregnant women (11). We believe that this is because of the fact that the socioeconomic level and health literacy further increase as the Partner's level of education increases and, therefore, the partner pays more attention to pregnant women's control visits (16).

Upon admission to the obstetric ward the women were asked about whether they received prenatal care and the quality thereof. In addition, all the hospital records during pregnancy were retrospectively reviewed on the basis of the hospital system and e-Nabız system. Therefore, the probability of patients forgetting or providing incomplete information was reduced. This is also the first study to examine our region's data on this topic.

Although the study was performed in a hospital, where the most of the deliveries in the region took place, the fact that it was designed as a single-centered study and did not cover all the births in the region is a limitation of our study.

In conclusion, the pregnant women in our region received inadequate prenatal care and those, who received the prenatal care, preferred the Second- and Third-tier healthcare institutions over the First-tier physicians.

It is necessary to establish the referral chain by implementing healthcare plans and ensuring that the First-tier prenatal care services are adequately proliferated to decrease maternal and neonatal mortality.

Currently, as the effects of the COVID 19 pandemic persist, pregnant women should be given more easy access to prenatal care services and its importance should not be ignored. Otherwise, increase in preventable maternal and neonatal mortality and morbidity would be inevitable.

Conflict of interest

None to declare.

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None to declare.

Authors' contributions

Concept: Ü.A.T.A., E.K., Design: Ü.A.T.A., S.K., Data Collection or Processing: Ü.A.T.A., Analysis or Interpretation: Ü.A.T.A., E.K., S.K., Literature Search: Ü.A.T.A., E.K., S.K., Writing: Ü.A.T.A., S.K., E.K.

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