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Women's Reproductive Health Behaviors and Access to Reproductive Health Services During the COVID-19 Pandemic: Implications for Future Health Crisis Preparedness

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ABSTRACT

Purpose: This study aimed to examine women's reproductive health behaviors and access to reproductive health services during the COVID-19 pandemic and to identify sociodemographic factors associated with these outcomes.

Methods: This descriptive study included 210 women aged 18–49 years in Türkiye. Data were collected using an online questionnaire covering sociodemographic characteristics, reproductive health behaviors, contraceptive use, and access to reproductive health services during the pandemic. Data were analyzed using descriptive statistics, Pearson chi-square tests, and binary logistic regression analysis.

Results: The mean age of the participants was 32.34 ± 9.28 years. Over half reported barriers to visiting healthcare facilities (53.3%) and obtaining appointments (60.5%). Contraceptive use was 47.6%, while 88.1% reported difficulty accessing modern contraceptive methods. Among women who experienced pregnancy, 43.2% received antenatal care, and 44.4% of postpartum women received postnatal care. Contraceptive use was associated with health insurance and family type, whereas changes in sexual frequency were associated with place of residence. Healthcare access barriers were associated with health insurance, gynecological examination history, and childbearing plans. Binary logistic regression identified COVID-19 diagnosis as the only independent predictor of the absence of healthcare access barriers (OR=3.035, 95% CI: 1.526–6.035, p=0.002).

Conclusion: The COVID-19 pandemic affected women's reproductive health behaviors and access to reproductive healthcare services. Although several sociodemographic characteristics were associated with reproductive health behaviors and healthcare access in bivariate analyses, only COVID-19 diagnosis was independently associated with the absence of healthcare access barriers in the multivariable analysis. These findings highlight the importance of maintaining equitable and uninterrupted reproductive healthcare services during future public health emergencies.

Keywords: COVID-19; reproductive health; women's health; healthcare access; contraception; maternal health.

ÖZET

Amaç: Bu çalışma, COVID-19 pandemisi sırasında kadınların üreme sağlığı davranışlarını ve üreme sağlığı hizmetlerine erişimini incelemeyi ve bunlarla ilişkili sosyodemografik faktörleri belirlemeyi amaçlamıştır.

Yöntem: Bu tanımlayıcı çalışma, Türkiye'de yaşayan 18–49 yaş arasındaki 210 kadın ile yürütülmüştür. Veriler, sosyodemografik özellikler, üreme sağlığı davranışları, kontraseptif yöntem kullanımı, sağlık hizmeti kullanımı ve pandemi döneminde üreme sağlığı hizmetlerine erişimi içeren çevrimiçi bir anket aracılığıyla toplanmıştır. Veriler tanımlayıcı istatistikler, Pearson ki-kare testi ve binary lojistik regresyon analizi kullanılarak değerlendirilmiştir.

Bulgular: Katılımcıların yaş ortalaması 32.34 ± 9.28 idi. Kadınların %53.3'ü sağlık kuruluşlarına erişimde, %60.5'i ise sağlık randevusu almada güçlük yaşadığını bildirmiştir. Kontraseptif kullanım oranı %47,6 iken, %88,1'i modern kontraseptif yöntemlere erişimde güçlük yaşadığını belirtmiştir. Pandemi döneminde gebe kalan kadınların %43.2'si antenatal bakım, postpartum dönemde olan kadınların ise %44.4'ü bakım almıştır. Kontraseptif yöntem kullanımı sağlık güvencesi ve aile tipi ile, cinsel ilişki sıklığındaki değişim ise yaşanılan yer ile ilişkili bulunmuştur. Sağlık kuruluşlarına başvurmada yaşanan engeller sağlık güvencesi, jinekolojik muayene öyküsü ve çocuk sahibi olma planı ile ilişkili bulunmuştur. Binary lojistik regresyon analizinde, COVID-19 geçirme durumu, pandemi döneminde sağlık kuruluşlarına başvurmada engel yaşamama durumunun tek bağımsız yordayıcısı olarak belirlenmiştir (OR=3,035; %95 GA:1,526–6,035; p=0,002).

Sonuç: COVID-19 pandemisi kadınların üreme sağlığı davranışlarını ve üreme sağlığı hizmetlerine erişimini etkilemiştir. İki değişkenli analizlerde çeşitli sosyodemografik özellikler üreme sağlığı davranışları ve sağlık hizmetlerine erişim ile ilişkili bulunmasına karşın, çok değişkenli analizde yalnızca COVID-19 geçirme durumu sağlık kuruluşlarına başvurmada engel yaşamama durumu ile bağımsız olarak ilişkili bulunmuştur. Bu bulgular, gelecekte yaşanabilecek halk sağlığı acil durumlarında üreme sağlığı hizmetlerinin eşitlikçi ve kesintisiz biçimde sürdürülmesinin önemini vurgulamaktadır.

Anahtar Kelimeler: COVID-19; üreme sağlığı; kadın sağlığı; sağlık hizmetlerine erişim; kontrasepsiyon; anne sağlığı.

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Reproductive health, as defined by the World Health Organization (WHO), is "a state of complete physical, mental, and social well-being, and not merely the absence of disease or infirmity, in all matters relating to the reproductive system and its functions and processes" (1, 2). Sexual and reproductive health services encompass a broad range of preventive, promotive, and curative healthcare interventions, including family planning, maternal and newborn care, prevention and treatment of sexually transmitted infections, and reproductive health counseling (2, 3). Continuous access to these services is essential for protecting women's health and reproductive rights throughout the life course (1, 3).

Public health emergencies can substantially disrupt the provision and utilization of essential health services, including reproductive healthcare. During such crises, healthcare systems often prioritize emergency response activities, which may reduce the availability of routine and preventive reproductive health services. These disruptions can limit access to family planning, antenatal and postnatal care, gynecological examinations, and cancer screening programs, thereby increasing the risk of adverse reproductive health outcomes (4, 5).

The coronavirus disease 2019 (COVID-19) pandemic placed unprecedented pressure on healthcare systems worldwide. Measures implemented to control viral transmission, such as lockdowns, mobility restrictions, social distancing practices, and the reallocation of healthcare resources, affected access to healthcare services (6, 7). In addition, fear of infection and concerns about exposure within healthcare settings discouraged many individuals from seeking routine healthcare services (7, 8). As a result, women faced significant barriers to accessing reproductive health services during the pandemic period.

Previous studies have reported disruptions in contraceptive services, delays in antenatal and postnatal care, reduced participation in preventive screening programs, and difficulties accessing gynecological services during the pandemic (9, 10). These disruptions raised concerns regarding unmet family planning needs, delayed diagnosis and treatment of reproductive health conditions, and reduced continuity of maternal healthcare services (9, 11).

Healthcare professionals, particularly nurses and midwives, played a critical role in sustaining reproductive healthcare services during the pandemic. Through health education, counseling, follow-up care, and advocacy, they contributed to reducing barriers to access and supporting women's reproductive health needs under challenging conditions (12). Nevertheless, the widespread disruptions observed during the pandemic highlighted vulnerabilities within reproductive healthcare systems and underscored the need for resilient service delivery models capable of ensuring continuity of care during future crises.

Although numerous studies have examined the impact of the COVID-19 pandemic on specific aspects of reproductive healthcare, most have focused on single outcomes such as contraceptive access, antenatal care, screening services, or sexual behavior. Few community-based studies have simultaneously evaluated multiple reproductive health behaviors, healthcare utilization, and access barriers within the same population while examining their associations with sociodemographic characteristics. Moreover, community-based studies from Türkiye remain limited. To address this gap, this study examined reproductive health behaviors, healthcare utilization, healthcare access barriers, and their associations with selected sociodemographic characteristics among women during the COVID-19 pandemic.

Although the data were collected during the COVID-19 pandemic, the challenges identified provide broader insights into vulnerabilities in reproductive healthcare delivery that may also arise during future public health emergencies. Understanding these experiences is essential for strengthening health system preparedness, improving service resilience, and ensuring continuity and equity of reproductive healthcare during future pandemics, natural disasters, and other large-scale crises.

The present study was informed by a conceptual framework suggesting that public health emergencies may influence women's reproductive health behaviors and access to reproductive healthcare services, and that these relationships may vary according to sociodemographic characteristics (Figure 1). Therefore, this study aimed to examine reproductive health behaviors and access to reproductive health services among women aged 18–49 years during the COVID-19 pandemic and to identify sociodemographic factors associated with these outcomes.

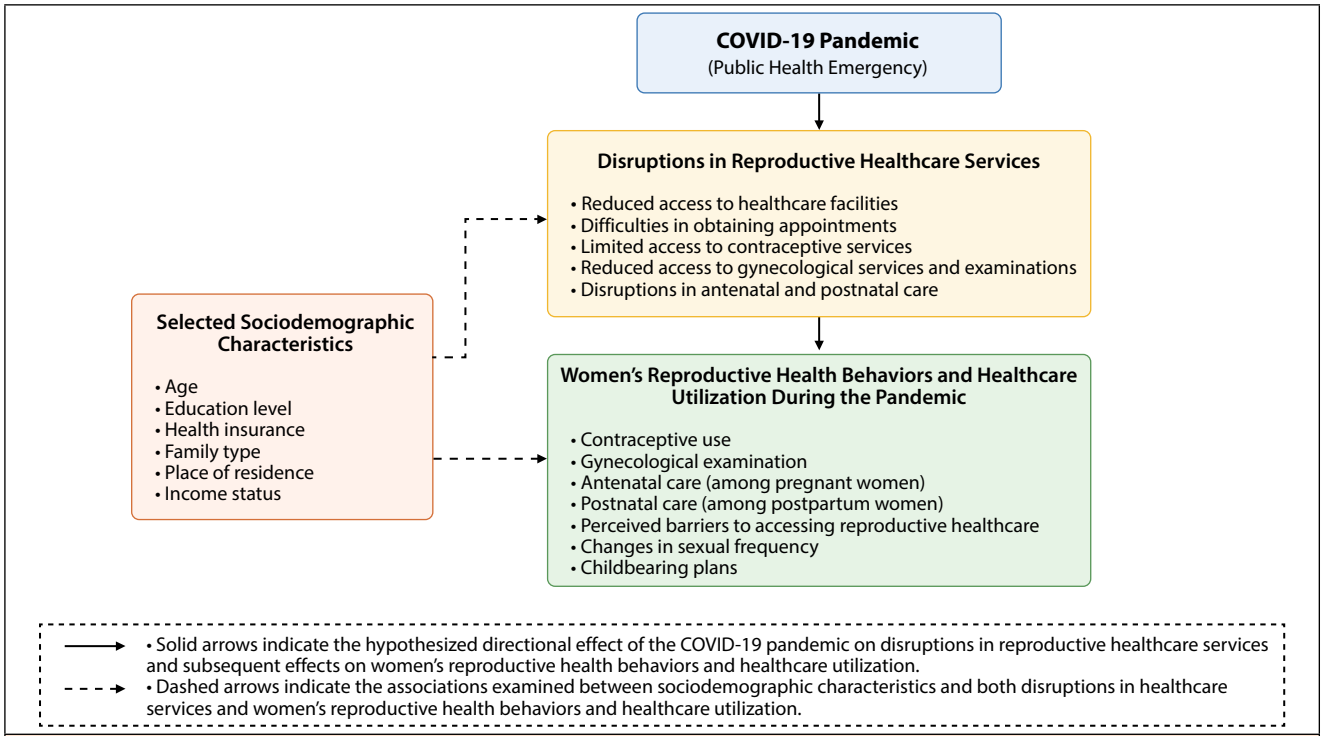

Figure 1. Conceptual Framework of the Study

Research Questions

1. What are the reproductive health behaviors of women aged 18–49 years during the COVID-19 pandemic?

2. What factors are associated with reproductive health service access and utilization among women aged 18–49 years during the COVID-19 pandemic?

Material and method

Study Design and Purpose

This descriptive study aimed to examine reproductive health behaviors and access to reproductive health services among women aged 18–49 years in Türkiye during the COVID-19 pandemic. The study is reported in accordance with the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) Statement.

Study Setting and Sample

Data were collected online between October 1, 2021, and April 1, 2022. The study population included women aged 18–49 residing in Türkiye. The minimum required sample size was calculated using G*Power version 3.1.9.7 for the chi-square test of independence, which was the primary statistical analysis planned to examine associations between sociodemographic characteristics and the primary categorical reproductive health outcomes (including contraceptive use, healthcare access barriers, gynecological examination, and childbearing plans). A medium effect size (Cohen's $w = 0.25$), a significance level of $\alpha = 0.05$, and a statistical power of 0.85 were specified, resulting in a minimum required sample size of 144 participants. Because no previous community-based study reporting comparable effect estimates for these outcomes was available, the selected effect size was based on Cohen's recommendations for chi-square tests (13). A non-probability convenience sampling method was used. The survey link was disseminated through the researchers' personal social media accounts and shared via online social networks, including WhatsApp and Instagram. Participants were encouraged to share the survey link with other eligible women. Eligible women who voluntarily agreed to participate completed the online questionnaire via Google Forms. A total of 397 responses were received through Google Forms survey. After excluding 81 respondents who did not meet the eligibility criteria and 106 incomplete questionnaires, 210 participants were included in the final analysis. The participant selection process is summarized in Figure 2.

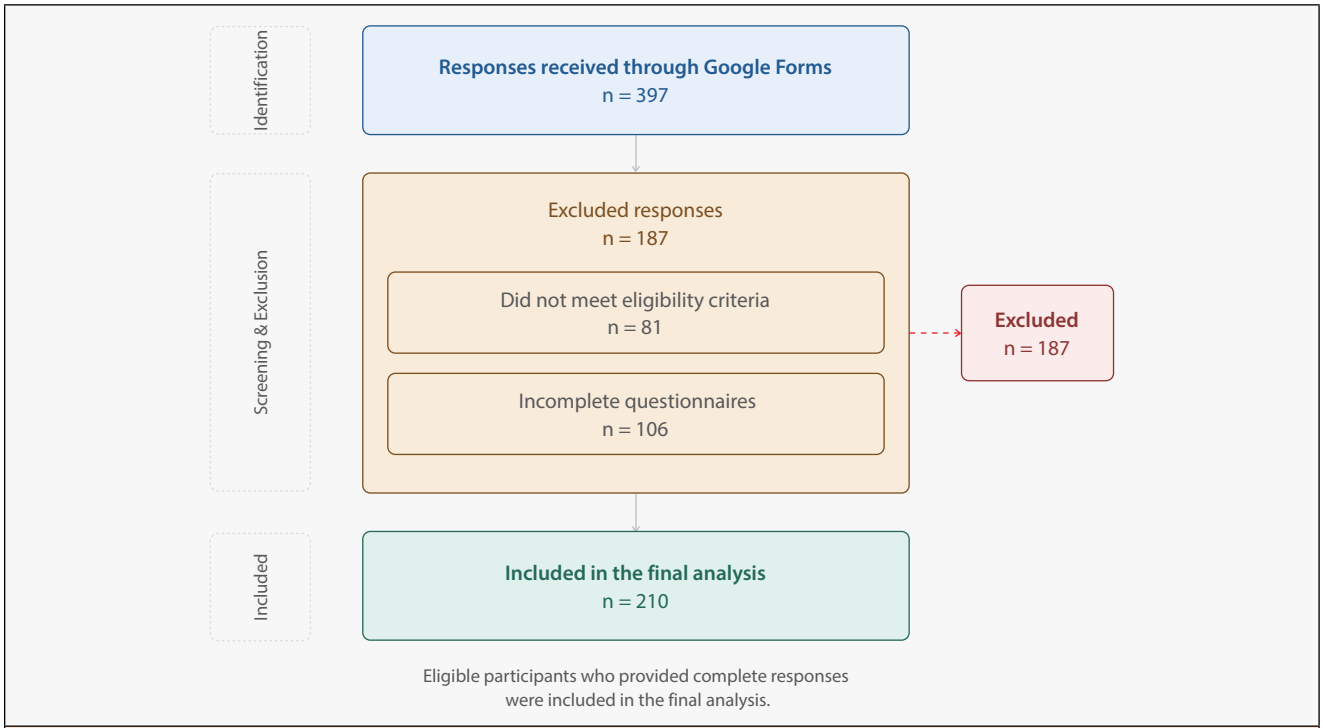

Figure 2. Flow Diagram of Participant Recruitment and Selection

Inclusion and Exclusion Criteria

Inclusion criteria were: being 18–49 years old, ongoing menstrual cycle, having internet access, reporting no psychiatric illness that could impair the ability to complete the questionnaire reliably, and providing informed consent.

Exclusion criteria included being outside the age range, inability to read and understand Turkish, or submitted incomplete questionnaires.

Data Collection Tool

Data were collected using a 44-item structured questionnaire developed by the researchers based on a comprehensive review of the literature (1, 2, 6, 7, 10, 14). The questionnaire consisted of two sections: sociodemographic characteristics and reproductive health behaviors during the COVID-19 pandemic. Content validity was ensured through evaluation by three experts in the field.

Prior to data collection, the questionnaire was pilot tested with 10 women who met the study eligibility criteria to evaluate the clarity, comprehensibility, and applicability of the items. Based on participants' feedback, minor revisions were made to improve the wording and readability of several items; no changes were made to the content or structure of the questionnaire. Data obtained from the pilot study were not included in the final analysis.

Data Collection Procedure

The survey was distributed through the researchers' personal social media accounts and shared with women's groups on WhatsApp, Instagram, etc. The questionnaire was administered using a Google Forms survey link. Before participation, individuals were informed about the study purpose, confidentiality, and voluntary participation, and digital informed consent was obtained. Only participants who provided consent were able to proceed with the questionnaire. To minimize missing data, all items were set as mandatory. Duplicate responses were minimized by restricting multiple submissions through Google Forms settings. No identifying information such as names or identification numbers was collected, and all data were obtained anonymously. No financial or non-financial incentives were provided. Data confidentiality was ensured through a password-protected Google Forms account accessible only to the research team. Completion of the questionnaire took approximately 10–15 minutes.

Data Analysis

Data were analyzed using IBM SPSS Statistics version 23.0. Descriptive statistics (frequency, percentage, mean, and standard deviation) were calculated. Chi-square tests were used to assess relationships between categorical variables. A p-value of <0.05 was considered statistically significant. In addition, binary logistic regression analysis was performed to identify independent predictors of barriers to healthcare access during the COVID-19 pandemic after adjusting for sociodemographic and reproductive health variables. Model fit was evaluated using the Hosmer–Lemeshow goodness-of-fit test, and the explanatory power of the model was assessed using the Nagelkerke R^2 statistic.

Ethical Considerations

Ethical approval was obtained from the Ministry of Health of the Republic of Turkey, Scientific Research Platform (Approval Date: June 29, 2021; Ref: 2021-06-29T11_16_10) and the Non-Interventional Clinical Research Ethics Committee of Kütahya Health Sciences University (Approval Date: September 27, 2021; Ref: 23913). Participants were informed about the study purpose, their rights, and confidentiality. Digital informed consent was obtained, and the study was conducted in accordance with the Declaration of Helsinki (15).

Results

A total of 210 women participated in the study. The mean age of the participants was 32.34 ± 9.28 years. Nearly half of the participants had a university degree (49.0%), 62.4% were married, and 85.7% had health insurance. Most participants lived in urban areas (61.9%) and belonged to nuclear families (86.2%). Most participants (99.0%) were not engaged in paid employment and were primarily homemakers (Table 1).

Regarding reproductive health behaviors during the COVID-19 pandemic, 90.0% of participants reported receiving a COVID-19 vaccine and 40.0% had been diagnosed with COVID-19. More than three-quarters of the women (77.6%) remained sexually active during the pandemic. Among sexually active women, 75,5% reported no change in sexual frequency, whereas 17.8% reported a decrease and 6.7% reported an increase. Menstrual changes were reported by 19.0% of participants. More than half of the women experienced barriers to accessing healthcare facilities (53.3%) and difficulties obtaining healthcare appointments (60.5%) during the pandemic (Table 2). Preventive reproductive healthcare utilization appeared limited. Only 41.0% of participants reported having undergone a gynecological examination within the previous year, and 36.6% reported participation

Table 1. Socio-Demographic Characteristics of Participants (N = 210)

Socio-Demographic Characteristics	n	%
Age Group (years)		
18-25	72	34.3
26-35	55	26.2
36-45	66	31.4
46-49	17	8.1
Mean age (years), Mean ± SD	32.34 ± 9.28	
Education Level		
Primary Education	18	8.6
High School	51	24.3
University	103	49.0
Postgraduate	38	18.1
Marital Status		
Married	131	62.4
Single	79	37.6
Employment Status		
Employed	2	1.0
Homemaker/Unemployed	208	99.0
Health Insurance		
Yes	180	85.7
No	30	14.3
Family Type		
Nuclear Family	181	86.2
Extended Family	19	9.0
Broken Family	10	4.8
Income Status		
Income < expenses	44	21.0
Income = expenses	118	56.2
Income > expenses	48	22.9
Place of Longest Residence		
Urban	130	61.9
Rural	80	38.1

Note: *Data are presented as frequency (n) and percentage (%).*

in national screening programs during the pandemic. Among women who did not undergo a gynecological examination, the most common reason was perceiving no need for the examination (89.5%). Similarly, among those who did not undergo Pap smear testing, the most frequently reported reason was considering the test unnecessary (80.4%) (Table 2).

Regarding fertility-related behaviors, 25.2% of women reported planning to have children during the pandemic, while 20.9% experienced pregnancy. Among pregnant women, 43.2% received prenatal care, and among postpartum women, 44.4% received postpartum care. Transportation difficulties and concerns related to the pandemic were commonly reported barriers to maternal healthcare utilization (Table 2).

Regarding contraceptive practices, 47.6% of participants reported using a contraceptive method during the pandemic. Condoms were the most commonly used method (54.0%), followed by withdrawal (24.0%) and intrauterine devices (16.0%). A substantial proportion of women (88.1%) reported difficulties accessing modern contraceptive methods during the pandemic (Table 2).

Table 2. Reproductive Health Behaviors During the Pandemic (n = 210)

Characteristics	n	%
COVID-19 Vaccination Status		
Yes	189	90.0
No	21	10.0
COVID-19 Diagnosis During the Pandemic		
Yes	84	40.0
No	126	60.0
Sexual Activity During the Pandemic		
Yes	163	77.6
No	47	22.4
Change in Sexual Frequency During the Pandemic (n=163)		
No change	123	75.5
Decrease in frequency	29	17.8
Increase in frequency	11	6.7
Change in Menstrual Cycle During the Pandemic		
No change in menstrual cycle	170	81.0
Decreased duration of periods	20	9.5
Increased duration of periods	20	9.5
Barriers to Visiting Healthcare Facilities During the Pandemic		
Yes	112	53.3
No	98	46.7
Problems Accessing Healthcare and Making Appointments During the Pandemic		
Yes	127	60.5
No	83	39.5
Gynecological Examination in the Past Year		
Yes	86	41.0
No	124	59.0
Reasons for Not Having a Gynecological Exam (n=124)		
No need	111	89.5
Due to the pandemic	13	10.5
Participation in National Screening Programs During the Pandemic		
Yes	77	36.6
No	133	63.4
Reasons for Having a Pap Smear Test (n=77) *		
Family history of cancer	2	2.5
General check-up	42	54.5
Healthcare personnel (doctor, nurse, midwife) recommendation	36	46.7

Reasons for Not Having a Pap Smear Test (n=133) *		
Fear of the pandemic	31	23.3
No need/didn't think it was necessary	107	80.4
Lack of sufficient information	15	11.2
Plans for Having Children During the Pandemic		
Yes	53	25.2
No	157	74.8
Reasons for Not Planning to Have Children (n=157)	**n**	**%**
Single	76	48.4
Family size is sufficient	49	31.2
Fear of the pandemic	32	20.4
Contraceptive Use During the Pandemic		
Using a method	100	47.6
Not using a method	110	52.4
Methods Used (n=100)*		
Condom	54.0	54.0
Withdrawal	24.0	24.0
IUD	16.0	16.0
Tubal ligation	10.0	10.0
Pill	9.0	9.0
Other traditional methods	5.0	5.0
Other modern methods	4.0	4.0
Difficulty Accessing Modern Contraceptive Sources During the Pandemic		
Yes	185	88.1
No	25	11.9
Pregnancy During the Pandemic		
Pregnant	44	20.9
Not pregnant	166	79.1
Receiving Prenatal Care During the Pandemic		
Yes	19	43.2
No	25	56.8
Reasons for Not Receiving Prenatal Care (n=25)		
Transportation issues	13	52.0
Concern about the pandemic	3	12.0
Lack of information	9	36.0
Healthcare Facility for Prenatal Care During the Pandemic (n=19)*		
Public hospital	19	46.3
Private hospital	14	34.1
Family health center	4	9.8
Other	4	9.8
Postpartum Care During the Pandemic (n=27)		
Yes	12	44.4
No	15	55,6
Reasons for Not Receiving Postpartum Care (n=15)*		
Risk of COVID-19 infection	15	100
Transportation issues	14	93.3
Impact of the Pandemic on Breastfeeding (n=27)		
Yes	2	7.4
No	25	92.6

Note: *Data are presented as frequency (n) and percentage (%). COVID-19: Coronavirus Disease 2019; IUD: Intrauterine Device.*
** Multiple responses were allowed for reasons for having a Pap smear test, contraceptive methods used, healthcare facilities used for prenatal care, and reasons for not receiving postpartum care*

Significant associations were identified between several sociodemographic characteristics and reproductive health behaviors. Contraceptive use differed significantly according to health insurance status (χ^2=19.858, p<0.001) and family type (χ^2=6.418, p=0.040). Women with health insurance reported substantially higher contraceptive use than women without health insurance (53.9% vs. 10.0%). Contraceptive use was highest among women living in nuclear families (50.3%) and lowest among those living in broken families (10.0%) (Table 3).

Table 3. Statistical Relationships Between Socio-Demographic Factors and Health Behaviors During the Pandemic (N = 210)

Variable	Using Contraception n (%)	Not Using Contraception n (%)	Total n (%)	χ^2	p
Education Level				5.961	0.114
Primary School	13 (72.2)	5 (27.8)	18 (100)		
High School	21 (41.2)	30 (58.8)	51 (100)		
University	46 (44.7)	57 (55.3)	103 (100)		
Postgraduate	20 (52.6)	18 (47.4)	38 (100)		
Health Insurance				19.858	<0.001*
Yes	97 (53.9)	83 (46.1)	180 (100)		
No	3 (10.0)	27 (90.0)	30 (100)		
Family Type				6.418	0.040*
Nuclear Family	91 (50.3)	90 (49.7)	181 (100)		
Extended Family	8 (42.1)	11 (57.9)	19 (100)		
Broken Family	1 (10.0)	9 (90.0)	10 (100)		
Living Place				1.571	0.210
Urban	57 (43.8)	73 (56.2)	130 (100)		
Rural	43 (53.8)	37 (46.2)	80 (100)		
Income Status				5.209	0.074
Income < expenses	26 (59.1)	18 (40.9)	44 (100)		
Income = expenses	57 (48.3)	61 (51.7)	118 (100)		
Income > expenses	17 (35.4)	31 (64.6)	48 (100)		
COVID-19 Diagnosis During the Pandemic				0.318	0.573
Yes	42 (50.0)	42 (50.0)	84 (100)		
No	58 (46.0)	68 (54.0)	126 (100)		

Note: *Chi-square test was used for comparisons. p < 0.05 was considered statistically significant.*

Changes in sexual frequency during the pandemic were significantly associated only with place of residence (χ^2=7.210, p=0.027). Women living in urban areas more frequently reported decreased sexual activity (23.5%), whereas women living in rural areas more frequently reported increased sexual activity (9.7%) during the pandemic (Table 4).

Table 4. Associations Between Socio-Demographic Characteristics and Changes in Sexual Frequency During the COVID-19 Pandemic (N = 163)

Variable	No Change n (%)	Decreased Frequency n (%)	Increased Frequency n (%)	Total n (%)	χ^2	p
Education Level					9.766	0.135
Primary School	15 (100.0)	0 (0.0)	0 (0.0)	15 (100)		
High School	28 (82.4)	5 (14.7)	1 (2.9)	34 (100)		
University	58 (73.4)	14 (17.7)	7 (8.9)	79 (100)		
Postgraduate	22 (62.9)	10 (28.6)	3 (8.6)	35 (100)		
Health Insurance					3.228	0.199
Yes	112 (73.7)	29 (19.1)	11 (7.2)	152 (100)		
No	11 (100.0)	0 (0.0)	0 (0.0)	11 (100)		
Family Type					3,964	0,411
Nuclear Family	102 (72.9)	27 (19.3)	11 (7.9)	140 (100)		
Extended Family	12 (92.3)	1 (7.7)	0 (0.0)	13 (100)		
Broken Family	9 (90.0)	1 (10.0)	0 (0.0)	10 (100)		
Living Place					7.210	0.027*
Urban	73 (71.6)	24 (23.5)	5 (4.9)	102 (100)		
Rural	50 (80.6)	5 (8.1)	6 (9.7)	61 (100)		
Income Status					4.956	0.292
Income < expenses	24 (80.0)	5 (16.7)	1 (3.3)	30 (100)		
Income = expenses	69 (76.7)	17 (18.9)	4 (4.4)	90 (100)		
Income > expenses	30 (69.8)	7 (16.3)	6 (14.0)	43 (100)		
COVID-19 Diagnosis During the Pandemic					4.818	0.090
Yes	54 (84.4)	8 (12.5)	2 (3.1)	64 (100)		
No	69 (69.7)	21 (21.2)	9 (9.1)	99 (100)		

Note: Chi-square test was used. Data refer only to sexually active participants (n=163). p < 0.05 indicates statistical significance

Health insurance status was significantly associated with healthcare access barriers (χ^2=3.938, p=0.047), gynecological examination status (χ^2=4.976, p=0.026), and childbearing plans during the pandemic (χ^2=6.398, p=0.011). Women without health insurance more frequently reported barriers to healthcare access compared with insured women (70.0% vs. 50.6%). Conversely, women with health insurance were more likely to undergo gynecological examinations (43.9% vs. 23.3%) and to report childbearing plans during the pandemic (28.3% vs. 6.7%). Childbearing plans were additionally associated with education level (χ^2=12.019, p=0.007), family type (χ^2=6.384, p=0.041), and place of residence (χ^2=4.101, p=0.043). Higher proportions of childbearing plans were observed among women with postgraduate education (34.2%) and university education (31.1%) compared with women with lower educational attainment. Similarly, women living in nuclear families (28.2%) and urban areas (30.0%) reported childbearing plans more frequently than women living in other family structures and rural areas (Table 5).

Table 5. Associations Between Socio-Demographic Characteristics and Healthcare Access Barriers, Gynecological Examination, and Childbearing Plans During the Pandemic (N=210)

Variable	Healthcare Access Barriers Yes n (%)	No n (%)	χ^2	p	Gynecological Examination Yes n (%)	No n (%)	χ^2	p	Childbearing Plan Yes n (%)	No n (%)	χ^2	p
Education Level			0.513	0.916			2.716	0.437			12.019	0.007*
Primary School	9 (50.0)	9 (50.0)			7 (38.9)	11 (61.1)			0 (0.0)	18 (100.0)		
High School	30 (58.8)	21 (41.2)			15 (29.4)	36 (70.6)			8 (15.7)	43 (84.3)		
University	53 (51.5)	50 (48.5)			48 (46.6)	55 (53.4)			32 (31.1)	71 (68.9)		
Postgraduate	20 (52.6)	18 (47.4)			16 (42.1)	22 (57.9)			13 (34.2)	25 (65.8)		
Health Insurance			3.938	0.047*			4.976	0.026*			6.398	0.011*
Yes	91 (50.6)	89 (49.4)			79 (43.9)	101(56.1)			51 (28.3)	129 (71.7)		
No	21 (70.0)	9 (30.0)			7 (23.3)	23 (76.7)			2 (6.7)	28 (93.3)		
Family Type			3.116	0.211			4.438	0.109			6.384	0.041*
Nuclear Family	93 (51.4)	88 (48.6)			78 (43.1)	103(56.9)			51 (28.2)	130 (71.8)		
Extended Family	13 (68.4)	6 (31.6)			7 (36.8)	12 (63.2)			2 (10.5)	17 (89.5)		
Broken Family	7(70.0)	3(30.0)			1(10.0)	9 (90.0)			0 (0.0)	10 (100.0)		
Place of Residence			0.929	0.335			0.030	0.863			4.101	0.043*
Urban	66 (50.8)	64 (49.2)			56 (43.1)	74 (56.9)			39 (30.0)	91 (70.0)		
Rural	46 (57.5)	34 (42.5)			30 (37.5)	50 (62.5)			14 (17.5)	66 (82.5)		
Income Status			0.730	0.694			2.389	0.303			3.517	0.172
Income < expenses	25 (56.8)	19 (43.2)			11 (25.0)	33 (75.0)			9 (20.5)	35 (79.5)		
Income = expenses	64 (54.2)	54 (45.8)			53 (44.9)	65 (55.1)			27 (22.9)	91 (77.1)		
Income > expenses	23 (47.9)	25 (52.1)			22 (45.8)	26 (54.2)			17 (35.4)	31 (64.6)		

Note: *Chi-square test was used for comparisons. $p < 0.05$ was considered statistically significant.*

Table 6. Binary Logistic Regression Analysis of Factors Associated with Barriers to Healthcare Access During the COVID-19 Pandemic

Variables	B	S.E.	Wald	p	Exp(B)	95% CI
Education level	0.003	0.181	0.000	0.985	1.003	0.704-1.431
Health Insurance	-0.145	0.758	0.037	0.848	0.865	0.196-3.823
Family Type	-0.222	0.428	0.268	0.604	0.801	0.346-1.854
Place of residence	-0.153	0.342	0.201	0.654	0.858	0.439-1.676
Income Status	-0.096	0.272	0.124	0.725	0.909	0.533-1.548
COVID-19 diagnosis during the pandemic	1.110	0.351	10.021	**0.002***	3.035	1.526-6.035
Contraceptive use during the pandemic	0.320	0.408	0.616	0.432	1.377	0.619-3.064
Change in sexual frequency during the pandemic	-0.063	0.636	0.010	0.921	0.939	0.270-3.266
Constant	0.102	1.899	0.003	0.957	1.107	-

Note: *Dependent variable: Barriers to healthcare access during the COVID-19 pandemic (Yes=1, No=2). Binary logistic regression analysis was performed using the Enter method. Hosmer–Lemeshow goodness-of-fit test: p=0.702; Nagelkerke R^2=0.119; overall correct classification rate=63.8%. OR, odds ratio; CI, confidence interval. p<0.05.*

Binary logistic regression analysis was performed to identify independent factors associated with the healthcare access barriers during the COVID-19 pandemic (Table 6). The model demonstrated an adequate fit according to the Hosmer–Lemeshow goodness-of-fit test (p=0.702), explained 11.9% of the variance (Nagelkerke R^2=0.119), and correctly classified 63.8% of cases. Among the variables included in the model, only COVID-19 diagnosis during the pandemic was identified as a statistically significant independent predictor (B=1.110, OR=3.035, 95% CI:1.526–6.035, p=0.002). Women diagnosed with COVID-19 were 3.035 times more likely to report that the pandemic did not prevent them from visiting healthcare facilities than women without a COVID-19 diagnosis. Health insurance, education level, family type, place of residence, income status, contraceptive use, and changes in sexual frequency were not independently associated with the absence of healthcare access barriers (p > 0.05).

Discussion

The COVID-19 pandemic substantially disrupted healthcare systems worldwide and affected the delivery and utilization of sexual and reproductive healthcare services. Restrictions on mobility, the reorganization of healthcare services, and concerns about infection reduced access to routine reproductive healthcare in many countries (2, 4, 5, 11). Consistent with these observations, women in the present study experienced considerable barriers to accessing reproductive healthcare services during the pandemic. More than half of the participants reported difficulties visiting healthcare facilities and obtaining healthcare appointments, while the utilization of preventive reproductive healthcare services, including gynecological examinations and national screening programs, remained limited. Overall, these findings suggest that the pandemic affected both women's reproductive health behaviors and their access to reproductive healthcare services.

One of the most notable findings of this study was the widespread difficulty women experienced in accessing modern contraceptive methods during the pandemic. Nearly nine out of ten participants reported difficulties obtaining modern contraceptive methods, although approximately half continued to use contraception. Previous studies conducted in Türkiye have similarly reported disruptions in access to family planning services and contraceptive methods during the COVID-19 pandemic, although the magnitude of these disruptions has varied across studies (8, 16, 17). International studies have also documented interruptions in contraceptive services resulting from lockdown measures, healthcare service disruptions, supply-chain problems, and the diversion of healthcare resources toward pandemic-related care (9, 10, 18). The relatively high prevalence observed in the present study may be explained by differences in study populations, data collection periods, and the operational definition of access difficulties. In the present study, difficulty accessing modern contraceptive methods referred to any self-reported difficulty experienced during the pandemic, regardless of whether women ultimately obtained a contraceptive method.

Pandemic-related restrictions, fear of infection, reduced utilization of routine reproductive healthcare services, and greater reliance on pharmacies or other non-clinical sources for contraceptive supplies may all have contributed to these findings (9, 10, 18). Collectively, these findings emphasize the importance of maintaining accessible, affordable, and uninterrupted family planning services during future public health emergencies in order to protect reproductive autonomy and reduce unmet contraceptive needs (19, 20).

Preventive reproductive healthcare utilization was also limited during the pandemic. Fewer than half of the participants reported having undergone a gynecological examination within the previous year, and participation in national screening programs was similarly limited. Among women who did not undergo a gynecological examination or Pap smear testing, the most commonly reported reason was the perception that these services were unnecessary. Similar reductions in preventive reproductive healthcare utilization have been reported in previous studies and have been attributed to concerns about infection, movement restrictions, and disruptions in healthcare delivery systems during the pandemic (11, 21). Reduced participation in preventive reproductive healthcare may delay the diagnosis and management of gynecological conditions and represents an important challenge for women's health during public health emergencies. These findings reinforce the need for effective public health communication strategies that encourage women to continue utilizing essential preventive reproductive healthcare services even during periods of healthcare disruption.

The multivariable analysis provided additional insight into the factors associated with healthcare access during the pandemic. After adjustment for sociodemographic and reproductive health variables, only COVID-19 diagnosis during the pandemic remained independently associated with healthcare access barriers. Women who had been diagnosed with COVID-19 during the pandemic were more likely to report that the pandemic did not prevent them from accessing healthcare services than women who had not received a COVID-19 diagnosis. This finding may reflect the greater need for medical evaluation, follow-up care, or management of persistent symptoms among women diagnosed with COVID-19, resulting in more frequent contact with healthcare services during the pandemic. Similar observations have been reported in population-based studies indicating that illness-related factors may be more strongly associated with healthcare utilization during the pandemic than sociodemographic characteristics (22). Although several sociodemographic characteristics were significantly associated with reproductive health outcomes in the bivariate analyses, these associations were not retained in the multivariable model. This finding suggests that the observed bivariate relationships may have been influenced by confounding or shared variance among the included variables. Accordingly, the results should be interpreted as associations rather than independent determinants of healthcare access during the pandemic.

Nevertheless, health insurance emerged as an important factor in the bivariate analyses. Women with health insurance were more likely to use contraceptive methods, undergo gynecological examinations, and report childbearing plans, whereas uninsured women more frequently reported barriers to healthcare access. These findings are consistent with previous studies demonstrating that health insurance and broader social protection mechanisms facilitate access to reproductive healthcare services, particularly during periods of healthcare system disruption (4, 9). Although health insurance did not remain an independent predictor in the multivariable analysis, its consistent associations across several reproductive health outcomes suggest that it may still represent an important indicator of equitable access to reproductive healthcare services during public health emergencies.

Educational attainment was also associated with childbearing plans in the bivariate analyses. Women with university and postgraduate education more frequently reported plans to have children than women with lower educational attainment. Higher educational attainment may be associated with improved health literacy, greater access to health information, and more favorable socioeconomic conditions, all of which may influence reproductive decision-making. Previous studies have similarly shown that fertility intentions during the COVID-19 pandemic were shaped by educational, social, and economic factors (23- 26). Concerns regarding pregnancy, childbirth, healthcare accessibility, and broader socioeconomic uncertainty may also have contributed to reproductive decision-making during the pandemic (25- 27).

Family structure and place of residence were likewise associated with selected reproductive health behaviors. Women living in nuclear families reported higher contraceptive use and were more likely to report childbearing plans than women living in extended or broken families. Similarly, women residing in urban areas more frequently reported childbearing plans than those living in rural areas. Place of residence was also associated with changes in sexual frequency during the pandemic. These findings support previous research suggesting that reproductive behaviors during public health emergencies are influenced not only by individual characteristics but also by social and environmental contexts (23- 26). Together, these findings highlight the importance of considering social context when planning reproductive health services during future public health emergencies.

Maternal healthcare utilization was also limited during the pandemic. Among women who experienced pregnancy during the pandemic, fewer than half reported receiving prenatal care, and fewer than half of postpartum women reported receiving postpartum care. Transportation difficulties, concerns about COVID-19 infection, and reduced availability of healthcare services were the most commonly reported barriers to maternal healthcare utilization. Similar disruptions in antenatal and postnatal care have been documented in previous national and international studies conducted during the pandemic (11, 24, 28).

The relatively low utilization of antenatal and postpartum care observed in the present study is clinically important because it may compromise the continuity of essential maternal healthcare services (9, 10, 28). Delayed or missed maternal healthcare visits may reduce opportunities for the early detection and management of pregnancy-related complications, timely health education,

breastfeeding support, postpartum recovery assessment, and psychosocial counseling (18, 28, 29). Maintaining uninterrupted maternal healthcare services during public health emergencies is therefore essential for protecting maternal and neonatal health. These findings support strengthening primary healthcare services, expanding flexible models of service delivery such as telehealth where appropriate, and incorporating reproductive and maternal healthcare into emergency preparedness planning to ensure continuity of essential services during future public health emergencies (4, 5, 11).

Despite the substantial disruptions in healthcare access, most participants reported no changes in menstrual patterns or sexual frequency during the pandemic. Although some studies have reported alterations in menstrual characteristics and sexual behavior during the COVID-19 pandemic, findings remain inconsistent across different populations and settings (30). These inconsistencies may reflect differences in sociocultural characteristics, public health restrictions, healthcare system responses, and study methodologies.

The findings should not be interpreted solely within the context of the COVID-19 pandemic. Overall, the findings of this study indicate that the COVID-19 pandemic affected both women's reproductive health behaviors and access to reproductive healthcare services. While several sociodemographic characteristics were associated with reproductive health outcomes in the bivariate analyses, only COVID-19 diagnosis during the pandemic remained independently associated with healthcare access barriers in the multivariable model. These findings highlight the complexity of reproductive healthcare utilization during public health emergencies and emphasize that healthcare access is influenced by multiple interacting individual, social, and healthcare system factors.

Although this study focused on the COVID-19 pandemic, its findings have broader implications for strengthening reproductive healthcare systems during future public health emergencies. The challenges identified provide important lessons for strengthening reproductive healthcare systems during future public health emergencies. Ensuring equitable and uninterrupted access to family planning services, preventive reproductive healthcare, antenatal and postnatal care, and other essential reproductive health services should remain a public health priority. Strengthening primary healthcare infrastructure, improving emergency preparedness, and developing resilient service delivery models may help reduce healthcare disruptions and protect women's reproductive health during future pandemics, natural disasters, and other large-scale crises.

Limitations and Strengths

This study has several limitations. First, its descriptive design does not permit causal inferences. Second, data were collected online using a non-probability convenience sampling method, which may have introduced selection bias by favoring women with internet access, active social media use, and greater willingness to participate in online surveys. In addition, geographical region was not collected; therefore, the regional distribution of the sample could not be assessed. Consequently, the study sample may not fully represent all women of reproductive age in Türkiye, particularly those from socioeconomically disadvantaged or digitally underserved populations. Therefore, the generalizability of the findings should be interpreted with caution.

Third, the study sample was highly homogenous regarding employment status, as 99.0% of the participants were unemployed or homemakers. Employment status may influence healthcare-seeking behavior through differences in daily routines, work-related constraints, time availability, and opportunities to access healthcare services. Therefore, the reproductive health behaviors and healthcare access experiences observed in this study may not fully reflect those of women in paid employment. Accordingly, caution should be exercised when generalizing the findings to all women of reproductive age in Türkiye, particularly employed women. Furthermore, all data were self-reported and may be subject to recall bias. Finally, although a multivariable logistic regression analysis was performed, the relatively limited sample size and the descriptive design may have reduced the ability to identify additional independent predictors of healthcare access barriers.

Despite these limitations, the study has several strengths. It simultaneously evaluated multiple reproductive health behaviors, healthcare utilization, and healthcare access barriers within the same community-based sample. The inclusion of a broad range of sociodemographic characteristics and the use of multivariable analysis enabled a more comprehensive assessment of women's reproductive health experiences during the COVID-19 pandemic. These findings may contribute to preparedness

planning and the development of resilient reproductive healthcare services for future public health emergencies.

Conclusion and Recommendations

This study found that women experienced substantial disruptions in reproductive health behaviors and access to reproductive healthcare services during the COVID-19 pandemic, particularly regarding healthcare access, modern contraceptive access, preventive reproductive healthcare, and maternal healthcare utilization. Although several sociodemographic characteristics were associated with reproductive health outcomes in the bivariate analyses, multivariable analysis identified COVID-19 diagnosis during the pandemic as the only independent factor associated with healthcare access barriers.

These findings highlight the vulnerability of reproductive healthcare services during public health emergencies and underscore the importance of integrating family planning, preventive reproductive healthcare, and maternal health services into emergency preparedness and response strategies. Strengthening equitable and uninterrupted access to these essential services, particularly for women facing socioeconomic disadvantage, may improve health system resilience during future public health emergencies. Future longitudinal and mixed-method studies are warranted to better understand the long-term effects of public health emergencies on women's reproductive health behaviors and access to reproductive healthcare services.

Declarations

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Authors' contributions:

Concept/Idea: NÇ, TÖ, FB; Design: NÇ, TÖ; Supervision/Consultancy: NÇ, FB; Data Collection and Processing: NÇ, TÖ, FB; Data Analysis and Interpretation: NÇ, TÖ; Literature Search: NÇ, TÖ, FB; Manuscript Writing: NÇ, TÖ, FB; Critical Review: NÇ, FB. We would like to thank all participants who supported the research with their contributions during the data collection phase.

Conflicts of Interest / Competing Interests

The authors declare that they have no relevant financial or non-financial interests to disclose.

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