# Fertility preferences of Turkish married women during the COVID-19 pandemic

Ayşe T Akduman[1], Ayşe F Türkçapar[1], Tuğçe İçöz[1], Özhan Özdemir[1] and Kazım E Karaşahin[1]

[1]Department of Obstetrics and Gynecology, University of Health Science Ankara, Türkiye (Correspondence to AT Akduman: drayse58@gmail.com).

## Abstract

**Background:** The COVID-19 pandemic had serious impact on the social, economic, psychological, and physical aspects of a large segment of the society, including women who were married or in stable relationships.

**Aim:** To evaluate changes in the desire to become mothers among married women in Türkiye during the COVID-19 pandemic.

**Methods:** This cross-sectional study used data from a self-administered questionnaire that examined the demographics and fertility preferences of 520 married Turkish women. We used the Fear of COVID-19 Scale (FCV-19S), Patient Health Questionnaire (PHQ-9) and Generalized Anxiety Disorder-7 (GAD-7) to measure fear, depression and anxiety related to COVID-19. We evaluated fertility preferences before and during the COVID-19 pandemic. Data analysis was conducted using SPSS version 11.5.

**Results:** Fifty of 112 study participants who planned to get pregnant halted their plans because of the pandemic. In contrast, 21 of 408 study participants who did not plan a pregnancy decided to get pregnant during the pandemic to enhance their positive disposition and overcome loneliness, and because of the increased leisure time and intimacy with their spouses. Mean scores (standard deviation) for all participants for PHQ-9, GAD-7, and FCV-19S were 7.4 (6.02), 4.93 (4.84), and 17.28 (6.16), respectively.

**Conclusion:** This study highlights the negative impact of the COVID-19 pandemic on women's fertility preferences in Türkiye due to uncertainty and anxiety. To confirm the results of this study, more research is needed to examine the longer-term impact and among a larger population.

Keywords: COVID-19, pandemic, fertility preferences, pregnancy plan, mental health, Türkiye

## Introduction

The COVID-19 pandemic was declared by WHO in March 2020 (1, 2). According to WHO data, by 24 January 2023, 664 million people had been infected and > 6 million had died, and in Türkiye, there were > 17 million confirmed cases and > 101 000 deaths (1).

The COVID-19 pandemic affected economic and social life as well as physical health. Major economic losses occurred in every country; salaries were often lowered and many people lost their jobs. The consequent decrease in income had social costs, such as psychological problems, loss of confidence, and alienation from the environment. During this period, women's fertility preferences began to change and the national fertility rates declined (3, 4). Women's childbearing intentions may change throughout their reproductive life because of the direct and indirect costs of parenting, according to their partner's wishes, and whether their relationship is stable or not (5). A serious health condition can also significantly influence the desire for childbearing (6). Uncertainty about the COVID-19 pandemic further complicated women's attitudes towards future pregnancy. A study from Italy reported that > 30% of people who planned to become parents before the pandemic avoided pregnancy, but 11.5% of participants had an increased desire for pregnancy during quarantine (7). It is unclear whether the COVID-19 pandemic will lead to a decline in births globally (8). In the early stages of the pandemic, short-term changes were observed regarding childbearing in several developed countries but there was a return to normal levels within a short time. The situation in low- and middle-income countries was similar to that in developed countries (9). Temporary fluctuations in fertility rates have been observed previously in other crises in many countries, such as the global economic recession in 2008, when economic hardship and unpredictability about the future caused short-term declines in fertility (10).

In this study, we aimed to determine the change (or stability) in individual fertility preferences of women of reproductive age in Türkiye during the COVID-19 pandemic. We also aimed to highlight the effects of the pandemic on the mental health of the general public and healthcare workers and to explore how pandemic fear may affect women's childbearing preferences in the future.

## Methods

### Study design and population

This was a questionnaire-based cross-sectional study conducted among 520 women in Ankara Gülhane Training and Research Hospital who were patients, companions, or employees between 11 March and 11 May 2021, which coincided with the increase and peak of COVID-19 infection, and social restrictions were in effect. At that time, COVID-19 vaccines were not available and none of the participants was vaccinated. The inclusion criteria were: (1) age 18–45 years; (2) married for at least 1 year; (3) a minimum primary school education; and (4) sufficient language proficiency to understand the survey questions. Exclusion criteria were: (1) women who were already pregnant; (2) a history of infertility; and (3) refusal to take the survey. Demographic variables included age, number of children, household income, employment status, current education level, and chronic somatic and mental illnesses (Table 1).

Power analysis was performed using GPower (v3.1.9.7) to determine the sample size. The power of the tests used in this study, 1– β (β = type II error probability) was determined as 10%, and the effect size was 0.51 to obtain 90% of the power at the level of α=0.05. The GPower test revealed that there should be at least 475 people in the study. Considering the possibility of data loss, 10% more participants were included, which gave a total of 520 participants.

The self-administered questionnaire was designed to evaluate the effects of the COVID-19 pandemic on couples' quality of life and mental health, and women's fertility preferences. The questionnaire consisted of closed and open-ended questions including demographic, factual, and attitude questions by examining the variables in previous studies on the subject (6, 11, 12). The Patient Health Questionnaire (PHQ-9), Generalized Anxiety Disorder Assessment (GAD-7), and Fear of COVID-19 Scale (FCV-19S) were used to assess the participants' mood during the pandemic. In terms of intelligibility of the questionnaire, it was tested in a small number of groups with similar inclusion criteria before the implementation.

### Fertility preferences

Fertility preferences before and during the COVID-19 pandemic were evaluated. Participants reported whether the pandemic had changed their fertility preferences. They were asked about what influenced their decisions and various response options were presented. The questions included a range of variables measuring the living conditions of the participants that may have influenced their fertility desires, such as the average time spent at home with a partner during the day. Socioeconomic factors, such as being away from home for work and the differences in monthly household income compared with the prepandemic period, were investigated. The participants stated whether they had chronic diseases that could affect a future pregnancy, such as hypertension or diabetes. They were asked

**Table 1 Descriptive characteristics of participants**

| Characteristics | N (520) | % |
|---|---|---|
| Age, mean (SD) | 34.48 (6.39) yr | |
| No. of children, median (range) | 1 (0–4) | |
| *Educational level* | | |
| Primary school | 26 | 5.0 |
| Middle school | 35 | 6.7 |
| High school | 138 | 26.5 |
| University | 321 | 61.7 |
| *Employment status* | | |
| Yes | 397 | 76.3 |
| No | 123 | 23.7 |
| *Working in healthcare* | | |
| Yes | 245 | 61.1 |
| No | 156 | 38.9 |
| *Chronic medical conditions* | | |
| None | 88 | 16.9 |
| ≥ 1 | 432 | 83.1 |
| *Mental health issue before the pandemic* | | |
| Yes - depression treatment | 42 | 8.1 |
| Yes - anxiety treatment | 17 | 3.3 |
| Treatment for other psychiatric illnesses | 9 | 1.7 |
| No | 452 | 86.9 |
| *Working pattern in the pandemic* | | |
| Part time | 66 | 15.9 |
| Online | 32 | 7.7 |
| Old working order | 298 | 71.8 |
| I quit my job | 19 | 4.6 |
| Monthly household income | | |
| < 3000 tl | 59 | 11.3 |
| 3000–5000 tl | 179 | 34.4 |
| > 5000 tl | 282 | 54.3 |
| *Reduction of monthly household income during pandemic* | | |
| Unchanged | 370 | 71.2 |
| Increased | 28 | 5.4 |
| 30% decreased | 61 | 11.7 |
| 50% decreased | 28 | 5.4 |
| 70% decreased | 21 | 4.0 |
| 100% decreased | 12 | 2.3 |
| *Time spent with the partner at home (hours)* | | |
| 0–6 | 233 | 44.8 |
| 7–12 | 173 | 33.3 |
| 13–18 | 69 | 13.3 |
| 19–24 | 45 | 8.7 |
| *Participants' experiences with COVID-19* | | |
| Asymptomatic | 36 | 6.9 |
| Mild disease | 88 | 16.9 |
| Moderate /severe disease | 3 | 0.6 |
| None | 393 | 75.6 |
| *Experiences of participants' spouses with COVID-19* | | |
| Asymptomatic | 27 | 5.2 |
| Mild disease | 82 | 15.8 |
| Moderate/severe disease | 5 | 1.0 |
| None | 406 | 78.1 |
| *Death of friend/relation from COVID-19* | | |
| Yes | 220 | 42.3 |
| No | 300 | 57.6 |

whether they or their spouses had COVID-19 and any consequent losses. The desire for childbearing was also analysed among 2 separate groups, one contained healthcare workers, and one did not.

## Mental health

The participants were screened for symptoms of depression and anxiety using FCV-19S, PHQ-9, and GAD-7, which were validated in Turkish and proven to be valid and reliable (*14, 16, 18*).

### FCV-19S

We used FCV-19S to determine participants' fear of COVID-19. FCV-19S is a survey that assesses the fear associated with the global pandemic (*13*), and comprises 7 statements, including "It makes me uncomfortable to think about COVID-19" and "I am afraid of losing my life because of COVID-19"; each with a 5-point Likert scale of options. Participants were asked to choose the option that best represented them for each statement. The total score ranged from 7 to 35, with higher scores indicating increasing fear of COVID-19.

### GAD-7

GAD-7 is a 7-item scale that measures the severity of anxiety experienced in the past 2 weeks. There are 4 options representing the severity of symptoms: never, few days, more than half a day, and almost every day, corresponding to 0, 1, 2, and 3 points, respectively. The total score is 0–21 (*15*). The cutoff value was determined as 10 in this study.

### PHQ-9

PHQ-9 is widely used to diagnose depression symptoms in the general population, and it is a valid and reliable 9-item scale with 4 Likert-type responses covering Diagnostic and Statistical Manual of Mental Disorders, 4th Edition criteria (*17*). Items examining depression symptoms in the past 2 weeks can be answered as: not at all, several days, more than half the days, and nearly every day; which have a value of 0, 1, 2, and 3 points, respectively (total score 0–27). The cutoff value was determined as 10 in this study.

### Ethical approval

Ethical approval for the study was obtained from the Turkish Ministry of Health and by the Non-Interventional Ethics Committee, University of Sağlık Bilimleri Health Science, Ankara Gülhane Training and Research Hospital (IRB No: 2021/121). The study protocol complied with the Declaration of Helsinki. The study participants were informed that the data obtained from the survey would be used in a scientific study and their consent was obtained. The names and personal data of the respondents were not recorded. Every stage of the study was carried out in accordance with the relevant guidelines and regulations.

### Statistical analysis

Statistical analysis of the data was done with SPSS version 11.5. The $\chi^2$ test was used to compare groups for categorical data and 2-group comparison of quantitative variables. The independent samples *t* test was used to compare 2 sample means from unrelated groups. The

Bonferroni test was used *post hoc* to detect different groups when significant differences were found after one-way analysis of variance. $P < 0.05$ was considered to be statistically significant.

## Results

### Participant characteristics

There were 520 women in the study and 245 (61.1%) were working in the healthcare sector. Basic demographic and socioeconomic characteristics of the study population are summarized in Table 1. Approximately 25% (n = 127) of the participants tested positive for COVID-19, and 36 (6.9%) were asymptomatic, 88 (16.9%) had mild symptoms, and 3 (0.6%) had moderate/severe symptoms. The spouses of 114 (22.0%) participants tested positive for COVID-19 and 220 (42.3%) participants experienced the death of an acquaintance from the disease.

### Pregnancy during the pandemic

We found substantial evidence of a reduction in the mean fertility trend during, compared with before, the pandemic ($P < 0.05$) (Table 2). Of the 112 (21.5%) participants who planned pregnancy before the pandemic, 50 (44.6%) cancelled their plan. The main reasons for cancelling included concerns about: the possible adverse effects of SARS-CoV-2 on pregnancy or the baby (*n* = 28; 56.0%); the economic well-being of the household (*n* = 14; 28.0%); and their own health (*n* = 8; 16.0%). Of the 408 (78.5%) participants who did not plan to become pregnant, 21 (5.14%) stated that they had a desire for pregnancy during quarantine. In 12 (57.14%) participants, the main reason was to add positivity to life. Other common reasons were feelings of loneliness, more leisure time, and more intimacy with their partners.

COVID-19 positivity among participants or their spouses did not affect their fertility preferences (Table 3). However, a significant number of participants who planned pregnancy before the pandemic and whose relatives died from COVID-19 decided not to become pregnant during the pandemic ($P = 0.013$).

## Mental health

We used PHQ-9, FCV-19S, and GAD-7 to evaluate various indicators of mental health and well-being during the COVID-19 pandemic and their effect on women's desire to plan a pregnancy. Mean scores and standard deviations of all participants were: PHQ-9, 7.4 (6.02); GAD-7, 4.93 (4.84); and FCV-19S, 17.28 (6.16). Mean scores in healthcare workers were: PHQ-9, 7.72 (6.06); GAD-7, 5.19 (4.93); and FCV-19S, 17.05 (6.20). The mean scores of the PHQ-9, GAD-7 and FCV-19S did not differ between healthcare professionals and the other participants.

There was no significant association between fertility preferences and PHQ-9, FCV-19S, and GAD-7 scores (Table 4).

The conditions examined by PHQ-9, FCV-19S, and GAD-7 were more severe among participants with low

**Table 2 Changing fertility preferences during the COVID-19 pandemic**

| Fertility preferences before the pandemic (*n*=520) | *n* (%) |
|---|---|
| *Question: Planning pregnancy* | |
| Yes | 112 (21.5) |
| No | 408 (78.5) |
| **Participants planning a pregnancy before the pandemic (*n*=112)** | |
| *Question: Have your fertility preferences changed due to the pandemic?* | |
| Yes | 50 (44.6) |
| No | 62 (55.4) |
| **Question: Reasons for stopping or interrupting intention to conceive (*n*=50)** | |
| *Possible adverse effects of SARS-CoV-2 on pregnancy or infant* | 28 (56) |
| Financial concerns | 14 (28) |
| Concerns about their own health | 8 (16) |
| **Participants who were not planning pregnancy before the pandemic (*n*=408)** | |
| *Question: Have your fertility preferences changed due to the pandemic?* | |
| Yes | 21 (5.14) |
| No | 387 (94.85) |
| **Question: Reasons for desire to plan a pregnancy during the pandemic (*n*=21)** | |
| *Add positivity to life* | 12 (57.14) |
| Loneliness, increased leisure time | 8 (38.09) |
| Intimacy with spouse | 1 (4.76) |

income, chronic illness, and a history of psychiatric illness (all $P < 0.05$) (Table 5). Participants who spent more time at home with their spouses (≥ 18 hours) had significantly lower scores ($P = 0.001$). FCV-19S was significantly higher among participants who had a friend or relative who died from COVID-19 ($P = 0.005$).

## Discussion

Pregnancy and becoming a mother are important life events that affect women psychologically, socially, physically, and existentially. From the perspective of existential psychology, making sense of life and living conditions are essential and create a strong motivation to live (*19*). Over the past 50 years, there has been a steep decline in fertility rates in almost every country. This universal decline in fertility has been driven largely by increased welfare brought about by social factors, including women's education and the accompanying detachment from reproduction as the purpose of life (*20*). The trend to give up childbearing is affected by many other factors, such as age and parity, divorce or child death, health conditions, economic situation, and personal health perceptions (*6*).

The COVID-19 pandemic has led to contradictory changes in couples' fertility preferences (*4, 21*). In this study, approximately half (45.5%) of the participants reported behavioural changes and a decision to postpone pregnancy because of the pandemic. A study conducted in the United States of America reported that > 30% of participants delayed pregnancy or had a decreased desire

to have children because of the pandemic (*22*). In contrast, the study also reported that 10–20% of participants who had not thought of having children before, now wanted to have children, or to have them earlier. A study conducted in the United Kingdom of Great Britain and Northern Ireland reported that the COVID-19 pandemic affected pregnancy plans and 72% of the participants delayed pregnancy for pandemic-related reasons (*23*). Concerns were mostly about changes in prenatal care, but also fears about the negative effects of the virus on pregnancy and infants. In contrast, 27% of respondents reported prioritizing their pregnancy plans by readjusting their priorities during this period. A study conducted in Australia found that there was a significantly greater decrease in reported intentions to have another child among women who experienced prolonged curfew (*21*). However, most of these studies were cross-sectional with small convenience samples.

Giving birth is one of the most important events in a woman's life, but it naturally brings some level of anxiety. In our study, the most frequent reasons for women giving up or delaying childbearing were the possible adverse effects of SARS-CoV-2 on pregnancy or their infants, and concerns about their own health. Factors such as the possibility of vertical transmission of SARS-CoV-2 or barriers to accessing the needed professional medical help may affect the desire to become a parent. Also, women may have felt anxious about the risk of exposure to COVID-19 during hospital visits while pregnant (*24, 25*). A large-scale study conducted in Sweden reported that pregnant women's concerns about their own and their

| Table 3 Impact of COVID-19-related experiences on fertility preferences | Participant positive (127) | Participant negative (393) | P | Participant's spouse positive (114) | Participant's spouse negative (406) | P | Death of friend/relative from COVID-19 (220) | No loss (300) | P |
|---|---|---|---|---|---|---|---|---|---|
| **Fertility preferences before the pandemic (n = 520)** | | | | | | | | | |
| *Question: Planning pregnancy* | | | 0.301 | | | 0.021 | | | 0.041 |
| Yes | 31 | 81 | | 34 | 78 | | 56 | 56 | |
| No | 96 | 312 | | 80 | 328 | | 164 | 244 | |
| **Participants who were planning pregnancy before the pandemic (n = 112)** | | | | | | | | | |
| *Question: Have your fertility preferences changed due to the pandemic?* | | | 0.770 | | | 0.076 | | | 0.013 |
| Yes | 14 | 36 | | 17 | 33 | | 32 | 18 | |
| No | 17 | 45 | | 17 | 45 | | 24 | 38 | |
| **Participants who were not planning pregnancy before the pandemic (n = 408)** | | | | | | | | | |
| *Have your fertility preferences changed due to the pandemic?* | | | 0.770 | | | 0.076 | | | 0.013 |
| Yes | 6 | 15 | | 5 | 16 | | 9 | 12 | |
| No | 90 | 297 | | 75 | 312 | | 155 | 232 | |

infant's health were at higher-than-normal levels during the pandemic (*26*). A cross-sectional study conducted in the Islamic Republic of Iran showed that fear of infection among pregnant women worsened mental health (*27*). We found that although participants cited financial and health concerns caused by the pandemic as reasons for abandoning or delaying pregnancy, there was no significant association between fertility preferences and FCV-19S, PHQ-9, and GAD-7 measurements.

Past economic hardship can strongly influence the dynamics of marriage, divorce, fertility, death, and migration. During times of economic hardship, couples' fertility decisions often differ by gender, age, number of children, and ethnicity (*28*). Unemployment during economic crises affects women and men of reproductive age in many ways. In 22 countries of the Organisation for Economic Co-operation and Development, the increase in both male and female unemployment during 1976–2008 had a negative impact on total fertility rates, which was greater over time, especially for women (*29*).

We found that financial concern was among the main reasons affecting fertility preferences. The household income of 23.4% of the participants decreased during the COVID-19 pandemic, 4.6% quit their jobs, and 4.8% of their spouses quit their jobs. However, these factors did not significantly delay pregnancy. In a cross-sectional study of 1179 women in New York, USA, between 30% and 80% of respondents who had intended to become pregnant within the year before the COVID-19 pandemic had delayed or cancelled their plans because of increased stress and financial insecurity (*30*).

The COVID-19 pandemic and measures to contain it caused additional health problems, including anxiety, depression, and fear worldwide (*31*). However, it is still unclear to what extent the pandemic affected mental health among the general population. In our study, mean scores for FCV-19S, PHQ-9, and GAD-7 were high among patients with previous psychiatric illness or concomitant chronic diseases.

A study in Türkiye suggested that the groups most affected by the pandemic were women, people living in urban areas, and those with previous psychiatric illness or concomitant chronic diseases (*32*). In a systematic review, increases in depression and mood disorder symptoms were more pronounced than measures of anxiety and general mental health, and these increases were greatest among people with physical health problems (*33*). No evidence of any change in symptoms was detected among people with a pre-existing mental health condition.

**Table 4. Impact of FCV-19S, PHQ-9 and GAD-7 scores on fertility preferences**

| | PHQ-9 | | FCV-19S | | GAD-7 | |
|---|---|---|---|---|---|---|
| | Mean (SD) | P | Mean (SD) | P | Mean (SD) | P |
| *Fertility preferences before the pandemic (n = 520)* | | | | | | |
| Yes | 7.03 (5.76) | 0.477 | 17.07 (5.87) | 0.683 | 4.64 (4.15) | 0.484 |
| No | 7.49 (6.09) | | 17.34 (6.24) | | 5.01 (5.02) | |
| *Participants planning pregnancy before the pandemic (n = 112)* | | | | | | |
| Fertility preferences have changed (*n* = 50) | 6.62 (5.48) | 0.700 | 17.56 (5.93) | 0.932 | 4.62 (4.01) | 0.777 |
| Fertility preferences have not changed (*n* = 62) | 7.35 (5.95) | | 16.84 (5.85) | | 4.56 (4.26) | |
| *Participants who were not planning pregnancy before the pandemic (n = 408)* | | | | | | |
| Fertility preferences have changed (*n* = 21) | 8.38 (5.38) | | 17.38 (6.30) | | 5.67 (4.57) | |
| Fertility preferences have not changed (*n* = 387) | 7.45 (6.14) | | 17.32 (6.26) | | 4.99 (5.05) | |

*FCV-19S = Fear of COVID-19 Scale; GAD-7 = Generalized Anxiety Disorder 7; PHQ-9 = Patient Health Questionnaire 9; SD = standard deviation.*

**Table 5 FCV-19S, PHQ-9, and GAD-7 scores and comparison according to personal information**

| | PHQ-9 | | FCV-19S | | GAD-7 | |
|---|---|---|---|---|---|---|
| | Mean (SD) | P | Mean (SD) | P | Mean (SD) | P |
| *Educational level* | | | | | | |
| Primary school | 7.19 (6.19) | | 16.23 (5.82) | | 4.81 (5.20) | |
| High school | | | | | | |
| University | | | | | | |
| Middle school | 5.77 (6.22) | 0.078 | 17.77 (6.61) | 0.544 | 4.17 (5.03) | 0.013 |
| High school | 8.39 (6.81) | | 17.78 (6.85) | | 6.08 (5.68) | |
| University | 7.17 (5.58) | | 17.10 (5.83) | | 4.53 (4.32) | |
| *Employment status* | | | | | | |
| Yes | 7.59 (6.26) | 0.204 | 17.07 (6.24) | 0.156 | 5.01 (5.01) | 0.527 |
| No | 6.79 (5.15) | | 17.98 (5.88) | | 4.69 (4.30) | |
| *Working in the healthcare industry* | | | | | | |
| Yes | 7.72 (6.06) | 0.727 | 17.05 (6.20) | 0.855 | 5.19 (4.93) | 0.502 |
| No | 7.49 (6.63) | | 16.93 (6.33) | | 4.84 (5.14) | |
| *Chronic illness* | | | | | | |
| Yes | 8.70 (5.44) | 0.026 | 18.93 (5.82) | 0.006 | 6.57 (5.36) | 0.001 |
| No | 7.13 (6.11) | | 16.95 (6.19) | | 4.60 (4.67) | |
| *Pre-pandemic depression or anxiety* | | | | | | |
| Depression treatment | 11.90 (8.14) | | 17.81 (5.90) | 0.484 | 7.90 (5.91) | |
| Anxiety treatment | 9.78 (5.65) | 0.001 | 19.18 (4.77) | | 6.76 (3.83) | 0.001 |
| Other psychiatric illness treatment | 11.11 (7.92) | | 18.44 (9.54) | | 7.78 (6.59) | |
| No | 6.81 (5.54) | | 17.14 (6.16) | | 4.53 (4.61) | |
| *Employment status during the pandemic* | | | | | | |
| Part-time | 8.68 (6.54) | | 18.03 (5.77) | | 4.83 (4.93) | |
| Online | 7.66 (6.32) | 0.328 | 16.50 (5.07) | 0.571 | 4.78 (3.71) | 0.968 |
| Old working order | 7.31 (6.22) | | 16.91 (6.45) | | 5.11 (5.19) | |
| I quit my job | 9.0 (6.97) | | 17.00 (5.86) | | 4.95 (4.56) | |
| *Monthly household income* | | | | | | |
| <3000 tl | 8.91 (6.62) | | 18.11 (6.94) | | 5.71 (5.14) | |
| 3000–5000 tl | 8.24 (6.50) | 0.005 | 17.77 (6.53) | 0.244 | 5.37 (5.57) | 0.144 |
| >5000 tl | 6.54 (5.44) | | 16.79 (5.72) | | 4.48 (4.23) | |
| *Time spent with the partner at home (hours)* | | | | | | |
| 0–6 | 8.66 (6.03) | | 17.82 (6.18) | | 5.63 (5.23) | |
| 7–12 | 6.95 (6.00) | 0.001 | 17.34 (5.54) | 0.001 | 4.87 (4.76) | 0.001 |
| 13–18 | 6.19 (5.05) | | 18.67 (5.95) | | 4.26 (3.72) | |
| 19–24 | 4.44 (5.98) | | 12.13 (6.31) | | 2.53 (3.69) | |
| *Death of friend/relation from COVID-19* | | | | | | |
| Yes | 7.34 (6.11) | 0.965 | 18.28 (6.06) | 0.005 | 5.22 (4.97) | 0.704 |
| No | 7.44 (5.98) | | 16.57 (6.14) | | 4.72 (4.76) | |

*FCV-19S = Fear of COVID-19 Scale; GAD-7 = Generalized Anxiety Disorder 7; PHQ-9 = Patient Health Questionnaire 9; SD = standard deviation.*

COVID-19 has undoubtedly had some impact on the mental health of healthcare providers. In Singapore, 27% of healthcare workers experienced psychiatric symptoms during the pandemic (34). Similarly, during the Ebola outbreaks that emerged in Africa in 2014 and 2018, high levels of anxiety were reported among people who had direct contact with infected patients, partly due to stigma (35). In our study, however, no significant difference was found in FCV-19S, GAD-7, and PHQ-9 scores between health and other workers. Also, no significant difference was found in fertility preferences between these groups.

Our study had some limitations. First, the study was limited to a small part of the Turkish population, therefore, generalization of the findings to other pandemic settings should be done with caution. Second, our research on pregnancy intention relied on retrospective assessment, so it may have been affected by recall bias. However, predictions that pandemics will become more frequent in the future make this study an important contribution to the literature by analysing the links between pandemic-related restrictions and fears and fertility behaviour.

## Conclusion

This study supports the previously reported preference of women for delaying or preventing pregnancy during the COVID-19 pandemic. We showed that uncertainty and anxiety brought about by the pandemic had a negative impact on the fertility intentions of the participants. Research on economic recession and fertility has shown that situations that affect living conditions often lead to delays in pregnancy, especially for first births, but there is an increase in fertility once the uncertainty created by the pandemic ends or economic concerns subside (36). Our study examined the pre-COVID-19 vaccine period, and the findings may be different in the post-vaccine period. Investigations among larger populations are needed to confirm our results, so that estimates of fertility preferences can be interpreted accordingly. The possible impact of the COVID-19 pandemic on stress, sexual activity, and concerns about health during pregnancy and infant health should be investigated.

## Préférences des femmes turques mariées en matière de fertilité pendant la pandémie de COVID-19

### Résumé

**Contexte :** La pandémie de COVID-19 a eu de graves répercussions sur les aspects sociaux, économiques, psychologiques et physiques d'une grande partie de la société, notamment sur les femmes mariées ou celles ayant une relation stable.

**Objectifs :** Évaluer l'évolution du désir de maternité chez les femmes mariées en Türkiye pendant la pandémie de COVID-19.

**Méthodes :** La présente étude transversale est fondée sur l'analyse des données obtenues à l'aide d'un questionnaire auto-administré portant sur les caractéristiques démographiques et les préférences en matière de fertilité de 520 femmes turques mariées. Nous avons utilisé l'échelle de la peur de la COVID-19 (Fear of COVID-19 Scale : FCV-19S, en anglais), le questionnaire sur la santé du patient (Patient Health Questionnaire : PHQ-9, en anglais) et l'outil de dépistage de l'anxiété généralisé (Generalized Anxiety Disorder-7 : GAD-7, en anglais) pour mesurer la peur, la dépression et l'anxiété liées à la COVID-19. Nous avons évalué les préférences en matière de fertilité avant et pendant la pandémie de COVID-19. L'analyse des données a été réalisée à l'aide du logiciel SPSS version 11.5.

**Résultats :** Cinquante participantes à l'étude sur 112 qui prévoyaient une grossesse ont interrompu leur projet en raison de la pandémie. En revanche, 21 participantes sur les 408 de l'étude qui n'avaient pas planifié de grossesse ont décidé de tomber enceinte pendant la pandémie pour renforcer leur état d'esprit positif, surmonter leur solitude, et parce qu'elles disposaient de plus de temps libre et d'intimité avec leur conjoint. Les scores moyens (écart-type) de toutes les participantes pour le PHQ-9, le GAD-7 et la FCV-19S étaient de 7,4 (6,02), 4,93 (4,84) et 17,28 (6,16), respectivement.

**Conclusion :** La présente étude souligne l'impact négatif de la pandémie de COVID-19 sur les préférences des femmes turques en matière de fertilité du fait de l'incertitude et de l'anxiété. Pour confirmer les résultats de cette étude, des recherches supplémentaires sont nécessaires afin d'examiner l'impact à plus long terme et au sein d'une population plus large.

# تفضيلات الخصوبة لدى النساء التركيات المتزوجات أثناء جائحة كوفيد-19

آيش أكدومان، آيش توركتشابار، توشه إتشوز، أوزان أوزدمير، كاظم كاراشاهين

## الخلاصة

**الخلفية:** كان لجائحة كوفيد-19 تأثير خطير على الجوانب الاجتماعية والاقتصادية والنفسية والجسدية لشريحة كبيرة من المجتمع، منها النساء المتزوجات أو اللواتي تتمتعن بعلاقات مستقرة.

**الأهداف:** هدفت هذه الدراسة الى تقييم التغيرات في رغبة النساء المتزوجات في تركيا في أن يصبحن أمهات أثناء جائحة كوفيد-19.

**طرق البحث:** استخدمت هذه الدراسة المقطعية بيانات من استبيان يُستكمل ذاتيًا لدراسة الخصائص السكانية وتفضيلات الخصوبة لدى 520 امرأة تركية متزوجة. واستخدمنا مقياس الخوف من كوفيد-19 (FCV-19S)، واستبيان صحة المرضى (PHQ-9)، واضطراب القلق العام 7 (GAD-7) لقياس درجة الخوف والاكتئاب والقلق المرتبط بمرض كوفيد-19. وقيَّمنا تفضيلات الخصوبة قبل جائحة كوفيد-19 وأثناءها. وأُجريَ تحليل البيانات باستخدام الإصدار 11.5 من برنامج SPSS.

**النتائج:** أوقفت 50 مشاركة من أصل 112 مشاركة في الدراسة خططن للحمل خُططهن بسبب الجائحة. وفي المقابل، قررت 21 من أصل 408 مشاركات في الدراسة لم يُخططن للحمل الحملَ أثناء الجائحة، وذلك لتعزيز نظرتهن الإيجابية للحياة، والتغلب على الوحدة، وبسبب زيادة وقت الفراغ ومعدل ممارسة العلاقة الحميمية مع أزواجهن. وبلغ متوسط الدرجات (الانحراف المعياري) لجميع المشاركات في اختبارات مقياس الخوف من كوفيد-19 واستبيان صحة المرضى واضطراب القلق العام 7.4 (6.02) و4.93 (4.84) و17.28 (6.16) على التوالي.

**الاستنتاجات:** تُسلط هذه الدراسة الضوء على التأثير السلبي لجائحة كوفيد-19 على تفضيلات الخصوبة لدى النساء في تركيا بسبب عدم اليقين والقلق. وتأكيدًا لنتائج هذه الدراسة، يلزم إجراء المزيد من البحوث لدراسة الأثر الأطول أجلاً على فئة أكبر من السكان.

## References

1. WHO coronavirus (COVID-19) dashboard [website]. Geneva: WHO; 2022 (https://covid19.who.int, accessed 4 July 2023).

2. Farooqui SI, Khan AA, Rizvi J, Hassan B, Adnan QU. Impact on mental health of families during Covid-19: a cross-sectional survey. Ethiop J Health Sci. 2021 Nov;31(6):1125–32. https://doi.org/10.4314/ejhs.v31i6.7 PMID:35392342

3. McLaren RA Jr, Trejo FE, Blitz MJ, et al. COVID-related "lockdowns" and birth rates in New York. Am J Obstet Gynecol MFM. 2021 Nov;3(6):100476. https://doi.org/10.1016/j.ajogmf.2021.100476 PMID:34478877

4. Naya CH, Saxbe DE, Dunton GF. Early effects of the COVID-19 pandemic on fertility preferences in the United States: an exploratory study. Fertil Steril. 2021 Oct;116(4):1128–38. https://doi.org/10.1016/j.fertnstert.2021.05.092 PMID:34325920

5. Iacovou M, Tavares LP. Yearning, learning, and conceding: reasons men and women change their childbearing intentions. Popul Dev Rev. 2011;37(1):89–123. https://doi.org/10.1111/j.1728-4457.2011.00391.x PMID:21735613.

6. Kodzi IA, Johnson DR, Casterline JB. To have or not to have another child: life cycle, health and cost considerations of Ghanaian women. Soc Sci Med. 2012 Apr;74(7):966–72. https://doi.org/10.1016/j.socscimed.2011.12.035 PMID:22361092

7. Micelli E, Cito G, Cocci A, Polloni G, Russo GI, Minervini A et al. Desire for parenthood at the time of COVID-19 pandemic: an insight into the Italian situation. J Psychosom Obstet Gynaecol. 2020 Sep;41(3):183–90. https://doi.org/10.1080/0167482X.2020.1759545 PMID:32379999

8. Haddad LB, Horton J, Ribner BS, Jamieson DJ. Ebola infection in pregnancy: a global perspective and lessons learned. Clin Obstet Gynecol. 2018 Mar;61(1):186–96. https://doi.org/10.1097/GRF.0000000000000332 PMID:29351152

9. How will the COVID-19 pandemic affect births? Technical brief. New York: UN Population Fund; 2021 (https://www.unfpa.org/sites/default/files/pub-pdf/How%20will%20the%20COVID-19%20pandemic%20affect%20births, accessed 4 July 2023).

10. Sobotka T, Skirbekk V, Philipov D. Economic recession and fertility in the developed world. Popul Dev Rev. 2011;37(2):267–306. https://doi.org/10.1111/j.1728-4457.2011.00411.x PMID:22066128

11. Utomo A, McDonald P, Utomo I, Hull TH. Do individuals with higher education prefer smaller families? Education, fertility preference and the value of children in Greater Jakarta. Child Indicators Res. 2021 Feb;14(3):139–61. https://link.springer.com/article/10.1007/s12187-020-09752-6

12. Smith JF, Eisenberg ML, Glidden D, et al. Socioeconomic disparities in the use and success of fertility treatments: analysis of data from a prospective cohort in the United States. Fertil Steril. 2011 Jul;96(1):95–101. https://doi.org/10.1016/j.fertnstert.2011.04.054 PMID:21616487

13. Ahorsu DK, Lin CY, Imani V, Saffari M, Griffiths MD, Pakpour AH. The Fear of COVID19 Scale: development and initial validation. Int J Ment Health Addict. 2022;20:1537–45. https://doi.org/10.1007/s11469-020-00270-8 PMID:32226353

14. Satici B, Gocet-Tekin E, Deniz ME, Satici SA. Adaptation of the Fear of COVID-19 Scale: its association with psychological distress and life satisfaction in Turkey. Int J Ment Health Addict. 2021;19(6):1980–8. https://doi.org/10.1007/s11469-020-00294-0 PMID:32395095

15. Spitzer RL, Kroenke K, Williams JBW, Löwe B. A brief measure for assessing generalized anxiety disorder: the GAD-7. Arch Intern Med 2006 May 22;166(10):1092–7. https://doi.org/10.1001/archinte.166.10.1092 PMID:16717171

16. Konkan R, Şenormancı Ö, Güçlü O, Aydın E, Sungur MZ. Validity and reliability study for the Turkish Adaptation of the Generalized Anxiety Disorder-7 (GAD-7) scale. Arch Neuropsychiatry. 2013;50:53–8. https://doi.org/10.4274/npa.y6308

17. Spitzer RL, Kroenke K, Williams JB. Validation and utility of a selfreport version of PRIME-MD: the PHQ primary care study. Primary Care Evaluation of Mental Disorders. Patient Health Questionnaire. JAMA 1999 Nov 10;282(18):1737–44. https://doi.org/10.1001/jama.282.18.1737 PMID:10568646

18. Sari YE, Kokoglu B, Balcioglu H, Bilge U, Colak E, Unluoglu I. Turkish reliability of the patient health questionnaire-9. Biomed Res. 2016;Special Issue:S460–2.

19. Prinds C, Hvidt NC, Mogensen O, Buus N. Making existential meaning in transition to motherhood--a scoping review. Midwifery. 2014 Jun;30(6):733–41. https://doi.org/10.1016/j.midw.2013.06.021 PMID:23928210

20. Aitken RJ. The changing tide of human fertility. Hum Reprod. 2022 Apr 1;37(4):629–38. https://doi.org/10.1093/humrep/deac011 PMID:35079808

21. Mooi-Reci I, Trinh TA, Vera-Toscano E, Wooden M. The impact of lockdowns during the COVID-19 pandemic on fertility intentions. Econ Hum Biol. 2023 Jan;48:101214. https://doi.org/10.1016/j.ehb.2022.101214 PMID:36565491

22. Lindberg LD, VandeVusse A, Mueller J, Kirstein M. Early impacts of the COVID-19 pandemic: findings from the 2020 Guttmacher Survey of Reproductive Health Experiences (https://www.guttmacher default/files/report_pdf/early-impacts-covid-19-pandemic-findings-2020- guttmacher-survey-reproductive-health.pdf, accessed 4 July 2023).

23. Flynn AC, Kavanagh K, Smith AD, Poston L, White SL. The impact of the COVID-19 pandemic on pregnancy planning behaviors. Womens Health Rep. 2021 Mar 23;2(1):71–7. https://doi.org/10.1089/whr.2021.0005 PMID:33786533

24. Poon LC, Abramowicz JS, Dall'Asta A, Sande R, Ter Haar G, Maršal K et al. ISUOG Safety Committee Position Statement on safe performance of obstetric and gynecological scans and equipment cleaning in the context of COVID-19. Ultrasound Obstet Gynecol. 2020 May;55(5):709–12. https://doi.org/10.1002/uog.22027 PMID:32207189

25. Kanniappan S, Jeyapaul MJ, Kalyanwala S. Desire for motherhood: exploring HIV-positive women's desires, intentions and decision-making in attaining motherhood. AIDS Care. 2008 Jul;20(6):625–30. https://doi.org/10.1080/09540120701660361 PMID:18576164.

26. Naurin E, Markstedt E, Stolle D, Enström D, Wallin A, Andreasson I et al. Pregnant under the pressure of a pandemic: a large-scale longitudinal survey before and during the COVID-19 outbreak. Eur J Public Health. 2021 Feb 1;31(1):7–13. https://doi.org/10.1093/eurpub/ckaa223 PMID:33231625

27. Salehi L, Rahimzadeh M, Molaei E, Zaheri H, Esmaelzadeh-Saeieh S. The relationship among fear and anxiety of COVID-19, pregnancy experience, and mental health disorder in pregnant women: a structural equation model. Brain Behav. 2020 Nov;10(11):e01835. https://doi.org/10.1002/brb3.1835 PMID:32969190

28. Sobotka T, Skirbekk V, Philipov D. Economic recession and fertility in the developed world. Popul Dev Rev. 2011;37(2):267–306. https://doi.org/10.1111/j.1728-4457.2011.00411.x PMID:22066128

29. OrsalDDK, Goldstein JR. The increasing importance of economic conditions for fertility. MPIDR Working Paper WP 2010-014. Rostock, Germany: Max Planck Institute for Demographic Research; 2010 (https://www.demogr.mpg.de/papers/working/wp-2010-014.pdf, accessed 4 July 2023).

30. Kahn LG, Trasande L, Liu M, Mehta-Lee SS, Brubaker SG, Jacobson MH. Factors associated with changes in pregnancy intention among women who were mothers of young children in New York City following the COVID-19 outbreak. JAMA Netw Open. 2021 Sep 1;4(9):e2124273. https://doi.org/10.1001/jamanetworkopen.2021.24273 PMID:34524437

31. Grasso DJ, Briggs-Gowan MJ, Carter AS, Goldstein BL, Ford JD. Profiling COVID-related experiences in the United States with the Epidemic-Pandemic Impacts Inventory: linkages to psychosocial functioning. Brain Behav. 2021 Aug;11(8):e02197. https://doi.org/10.1002/brb3.2197 PMID:34216110

32. Özdin S, Bayrak Özdin Ş. Levels and predictors of anxiety, depression and health anxiety during COVID-19 pandemic in Turkish society: the importance of gender. Int J Soc Psychiatry. 2020 Aug;66(5):504–11. https://doi.org/10.1177/0020764020927051 PMID:32380879

33. Robinson E, Sutin AR, Daly M, Jones A. A systematic review and meta-analysis of longitudinal cohort studies comparing mental health before versus during the COVID-19 pandemic in 2020. J Affect Disord. 2022 Jan 1;296:567–76. https://doi.org/10.1016/j.jad.2021.09.098 PMID:34600966

34. Lee SM, Kang WS, Cho AR, Kim T, Park JK. Psychological impact of the 2015 MERS outbreak on hospital workers and quarantined hemodialysis patients. Compr Psychiatry. 2018 Nov;87:123–7. https://doi.org/10.1016/j.comppsych.2018.10.003 PMID:30343247

35. Park JS, Lee EH, Park NR, Choi YH. Mental health of nurses working at a government-designated hospital during a MERS-CoV outbreak: a cross-sectional study. Arch Psychiatr Nurs. 2018 Feb;32(1):2–6. https://doi.org/10.1016/j.apnu.2017.09.006 PMID:29413067

36. Neels K. Temporal variation in unemployment rates and their association with tempo and quantum of fertility: some evidence for Belgium, France and the Netherlands. Paper presented at the Annual Meeting of the Population Association of America, Dallas, 17 April 2010 (https://paa2010.populationassociation.org/papers/101064, accessed 4 July 2023).