



Original Article

The role of fear of COVID-19 during pregnancy in controlling the pregnancy process and its effect on perceived stress before birth

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Abstract

Objectives: This research seeks to explore the distinct impacts of the COVID-19 pandemic on pregnancy, with particular emphasis on how fear of COVID-19 and perceived stress influence prenatal management.

Methods: The sample of this descriptive and correlational research consisted of 89 pregnant women in a province in the Western Black Sea region of Turkey. Data were collected using the Personal Information Form, the COVID-19 Phobia Scale (C19P-S), the Health Locus of Control Scale for the Fetus, and the Antenatal Perceived Stress Inventory. Multiple linear regression analysis was conducted to investigate the effects of pregnant women's age, medical and obstetric risks affecting fetal health, psychosocial changes in pregnancy, expectations for childbirth, COVID-19 vaccination status, and recent loss variables on the Health Locus of Control Scale for the Fetus. A $p < 0.05$ value was considered statistically significant.

Results: The findings indicate that the fear of COVID-19 particularly lowers the focus on internal health checks and can lead to increased stress and anxiety during pregnancy. Additionally, it was concluded that receiving the COVID-19 vaccine has a positive impact on internal health check focus, thereby contributing to a safer and more controlled pregnancy process.

Conclusion: These findings emphasize the importance of supporting both the psychological and physical health of pregnant women during the pandemic.

Keywords: Control; COVID-19; midwife; nurse; phobia; pregnancy; stress

Pregnancy, although one of the most significant periods in a woman's life, brings with it numerous physical and psychological changes.^[1,2] The onset of the COVID-19 pandemic has significantly heightened uncertainty, anxiety, and stress levels experienced during this period. Pregnant women, while trying to cope with stressors such as the fear of contracting the COVID-19 virus, difficulties in accessing healthcare services, social isolation, and quarantine, have also found their ability to manage the birth process adversely affected.^[1,3] The stress and anxiety experienced during pregnancy can not only jeopardize the health of the expectant mother but also pose a threat to the development of the fetus.^[4]

From the early days of the COVID-19 pandemic onward, studies examining how stress and anxiety during pregnancy impact prenatal processes have demonstrated that the uncertainty and fear during this period lead to both psychological and physiological consequences.^[3,5-7] In particular, the fear of contracting the virus and concerns that it could cause complications during childbirth have heightened stress levels among pregnant women. It is believed that this situation has significant implications for both preparation for childbirth and the postpartum period. For instance, research has indicated that fear of COVID-19 is linked to premature delivery, reduced birth weight, and various other negative pregnancy outcomes.^[5,7]

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Moreover, studies indicate that pandemic-specific stress factors may influence the choice of birth setting, with an increase in demand for out-of-hospital births being observed.^[3]

In the literature, numerous studies have been conducted on the impact of psychological stress caused by the COVID-19 pandemic on the mental health of expectant mothers during pregnancy. Notably, there is evidence suggesting that the fear of contracting COVID-19 during pregnancy has led to an increase in levels of depression, anxiety, and stress.^[8-10] A study conducted in Poland revealed a strong relationship between the COVID-19 pandemic and perceived stress during pregnancy, as well as fear of childbirth.^[9]

Similarly, it has been reported that the isolation, uncertainty, and fear of infection caused by the pandemic have heightened anxiety among pregnant women during the preparation for childbirth and negatively impacted their ability to manage this process.^[8] Moreover, adverse effects have been observed on maternal bonding and self-efficacy during and after childbirth.^[2]

Locus of control was first introduced as a psychological concept in the mid-20th century by Rotter.^[11] Later, the Multidimensional Locus of Control Scale developed by Levenson enabled a more detailed assessment of this concept by expanding the scope of measurement to include the dimensions of internal control, chance, and powerful others.^[12] Fetal health locus of control is a significant psychological construct that reflects pregnant women's perceptions of control over their baby's health.^[13] Pregnant women tend to adopt either an internal or external locus of control when making health-related decisions. Those with an internal locus of control are more likely to take responsibility for managing their own health and pregnancy process, whereas those with an external locus of control tend to attribute health outcomes to external factors such as luck, fate, or healthcare providers.^[14] An internal locus of control may help prevent adverse pregnancy outcomes by encouraging women to avoid risky behaviors during pregnancy.^[15,16] Therefore, assessing expectant mothers' beliefs and perceptions regarding fetal health control is important for promoting more effective pregnancy management.^[14]

Although the COVID-19 pandemic was no longer at its peak during the data collection period, this study focuses on the lingering psychological impacts of the pandemic on pregnant women. Specifically, it examines how residual fear of COVID-19 and perceived antenatal stress influence women's ability to manage the pregnancy process. While most studies in the literature have explored the general effects of the pandemic, this study uniquely concentrates on prepartum psychological factors, aiming to provide a deeper understanding of how long-term pandemic-related anxieties may still affect maternal well-being. In doing so, it offers valuable insights for healthcare professionals on the importance of psycholog-

What is presently known on this subject?

- The fear of COVID-19 increases perceived stress during pregnancy and leads to difficulties in managing the birthing process.

What does this article add to the existing knowledge?

- Pregnant women who have received the COVID-19 vaccine tend to have higher scores in internal health control focus and are more likely to manage the pregnancy process in a safer and more controlled manner.
- Psychosocial changes and age have a significant impact on internal health control focus during pregnancy.

What are the implications for practice?

- The increase in fear of COVID-19 reduces pregnant women's control over their health, leading to higher levels of stress and anxiety.

ical support and stress management strategies for pregnant women, even in the post-pandemic period.

Research Questions

1. How does fear of COVID-19 correlate with each dimension (Internal, Chance, Powerful Others) of the Fetal Health Locus of Control Scale?
2. What is the effect of COVID-19 vaccination status on pregnant women's perception of control over fetal health across the three locus of control dimensions?
3. How do perceived stress levels before birth relate to pregnant women's health locus of control, specifically in terms of internal control, chance, and powerful others?

Materials and Method

Design

This study is a descriptive, correlational, cross-sectional analysis conducted with pregnant women in Türkiye from February to September 2024.

Participants

This research is designed as a descriptive and correlational study. The sample consisted of 89 pregnant women who attended three Family Health Centers (FHCs) selected through simple random sampling from FHCs located in a province in the Western Black Sea region of Türkiye. The inclusion criteria were being aged 18 or older, voluntarily participating in the study, not having any clinically diagnosed psychiatric disorder, and being in the 36th to 39th week of pregnancy. Participants were excluded if they exhibited a chronic illness or any communication impairment.

VanVoorhis and Morgan^[10] suggest that regression analyses with six or more predictor variables require a minimum of 10 participants per variable, with 30 participants per variable recommended to detect a small effect size. Based on the assumption of 10 participants per predictor variable, the sample size for regression analysis was calculated as 70 individuals (10×7 (number of variables)=70). The literature

emphasizes that, in small study populations, selecting a larger-than-required sample can improve representativeness, yielding more reliable and valid results.^[17]

The final study sample consisted of 89 pregnant women who volunteered, met the inclusion criteria, and completed the data collection forms accurately. Data were collected through face-to-face interviews conducted at the Family Health Centers where the participants routinely received care. Each participant took approximately 20 minutes to complete the survey. Importantly, no participants withdrew or left the study unfinished during the data collection process.

Procedure

The research followed the Declaration of Helsinki on Human Rights. Ethical approval for this study was obtained from the Ethics Committee for Social and Human Sciences Research (Ethics Approval Number: 2024/02, Date: January 26, 2024). Informed written consent was secured from participants before the study began.

Measures

In this study, data were gathered using a Personal Information Form, the COVID-19 Phobia Scale (C19P-S), the Health Locus of Control Scale for the Fetus, and the Antenatal Perceived Stress Inventory (APSI). Permissions for the use of the COVID-19 Phobia Scale (C19P-S), the Health Locus of Control Scale for the Fetus, and the Antenatal Perceived Stress Inventory were obtained from the authors. Participants provided written informed consent prior to their involvement in the study. The collected data were automatically transferred into an SPSS file for analysis.

Personal Information Form

The researcher-designed form includes six questions aimed at gathering information on the socio-demographic characteristics of the pregnant women and two questions that assess their knowledge related to COVID-19.

The COVID-19 Phobia Scale (C19P-S)

The COVID-19 Phobia Scale (C19P-S) is a self-report instrument created to assess phobia associated with the coronavirus. The scale is a 5-point Likert format, where items are rated from 1 ("Strongly Disagree") to 5 ("Strongly Agree"). The scale consists of four subdimensions: Psychological Subdimension, Somatic Subdimension, Social Subdimension, and Economic Subdimension. The subdimension scores are calculated by summing the item scores within each subdimension. The overall C19P-S score is determined by summing the scores across all subdimensions, yielding a range from 20 to 100 points. Higher scores indicate higher levels of phobia in the specific subdimensions and overall corona-phobia. The Cron-

bach's alpha value for the overall scale is 0.92, while it ranges between 0.85 and 0.89 for the subdimensions.^[18] In this study, the Cronbach's alpha values were found to be 0.87 for the psychological subdimension, 0.85 for the somatic subdimension, 0.78 for the social subdimension, 0.83 for the economic subdimension, and 0.95 for the entire scale.

The Health Locus of Control Scale for the Fetus

The Health Locus of Control Scale for the Fetus, developed by Labs and Wurtele in 1986, aims to facilitate the prediction of factors that contribute to adherence to health advice during pregnancy. Initially, the scale consisted of 85 items, but after analysis, it was refined to its final version with 18 items. The scale comprises three subscales:

1. Internal Health Locus of Control
2. Chance Health Locus of Control
3. Powerful Others Health Locus of Control

The scale is Likert-type and consists of 18 items, with each statement rated on a scale from 0 ("Strongly Disagree") to 9 ("Strongly Agree"). There are no reverse-coded items. Each subscale's total score ranges from 0 to 54, with elevated scores signifying a more favorable outlook towards "internal control," "chance," or "powerful others" as the dominant factor influencing health. Conversely, lower scores reflect a more negative attitude towards these factors.^[13]

The validity and reliability study for the Turkish population was carried out by Duyan et al.^[19] The internal consistency coefficients were determined to be 0.802 for the Internal Health Locus of Control, 0.876 for the Chance Health Locus of Control, and 0.750 for the Powerful Others Health Locus of Control subscales. In this study, the Cronbach's alpha coefficients were found to be 0.91 for the Internal Health Locus of Control subdimension, 0.73 for the Chance Health Locus of Control subdimension, 0.69 for the Powerful Others Health Locus of Control subdimension, and 0.77 for the entire scale.

Antenatal Perceived Stress Inventory

The Antenatal Perceived Stress Inventory (APSI), created by Razurel and colleagues in Sweden in 2014, evaluates stress perception during pregnancy.^[20] The study to establish Turkish validity and reliability was carried out by Atasever and Sis Çelik in 2018. The scale is applied to pregnant women between the 36th and 39th weeks of pregnancy and consists of 12 items across three subdimensions, scored on a 5-point Likert scale (1=never to 5=very often).

The perceived stress score is obtained by totaling the item scores and dividing by the number of items, with possible scores ranging from 1 to 5. Higher scores represent greater levels of perceived stress in pregnant women.

The subdimensions of the scale are as follows:

1. Medical and Obstetric Risks/Fetal Health
2. Psychosocial Changes During Pregnancy
3. Prospect of Childbirth

Each subdimension score is determined by adding the item scores and dividing by the number of items, yielding an average score between 1 and 5.

Validity and reliability analysis by Razurel et al.^[20] reported an overall Cronbach's alpha coefficient of 0.75 for the scale, reflecting acceptable internal consistency. In this study, the Cronbach's alpha coefficients were found to be 0.72, 0.79, and 0.76 for the subdimensions, respectively, and 0.91 for the entire scale.^[21]

Data Analysis

Data analysis was carried out using SPSS Statistics software, version 27.0 (IBM Corp., Armonk, NY). Descriptive statistics were presented as mean±standard deviation (SD) or percentages (%). The Shapiro-Wilk test was employed to verify data normality ($p>0.05$). To assess the internal consistency of the scales, Cronbach's alpha coefficient was calculated. Multiple linear regression analysis explored how factors such as age, medical and obstetric risks, fetal health, psychosocial changes during pregnancy, childbirth expectations, COVID-19 vaccination status, and recent bereavement affected the Health Locus of Control Scale for the Fetus. A p -value below 0.05 indicated statistical significance.

Results

When the socio-demographic characteristics of pregnant women were examined, it was found that their average age was 28.60 ± 5.21 years, 36% had a university-level education, 86.5% lived in a nuclear family structure, 27% were employed in some form of work, and 67.4% had an income equal to their expenses (Table 1).

Factors Affecting Fetal Health Locus of Control Scale/Internal Health Locus of Control

To evaluate the effects of factors such as age, medical and obstetric complications, fetal well-being, psychological shifts during pregnancy, expectations around childbirth, COVID-19 vaccination status, and the recent loss of a loved one on internal health locus of control in pregnant women, multiple linear regression analysis was applied. The model is statistically significant ($F=12.220$, $p<0.001$). The independent variables included in the model explain 51.4% of the variance in internal health locus of control ($R^2=0.514$). Additionally, the Durbin-Watson statistic is 1.766, indicating no autocorrelation in the model.

The constant coefficient of the model was found to be 39.705, meaning that when all independent variables are

Table 1. The socio-demographic characteristics of the pregnant women

Variable	n	%
Age (mean±SD)	28.60±5.21	
Gestational week	36.73±1.25	
Educational status		
Middle school	32	36.0
High school	25	28.0
University	32	36.0
Family types		
Nuclear family	77	86.5
Extended family	12	13.5
Employment status		
Yes	24	27.0
No	65	73.0
Economic status		
Income is more than expenses	17	19.1
Income equals expenses	60	67.4
Income is less than expenses	12	13.5

SD: Standard deviation

equal to zero, the internal health locus of control score is 39.705 points ($p<0.001$).

Age is a significant and positive predictor of the Internal Health Locus of Control ($B=0.477$, $p=0.024$). This indicates that for every one-unit increase in age, the Internal Health Locus of Control score increases by an average of 0.477 points.

COVID-19 phobia is a significant and negative predictor of the Internal Health Locus of Control ($B=-0.529$, $p<0.001$). This indicates that as COVID-19 phobia increases, the Internal Health Locus of Control score decreases by an average of 0.529 points.

Psychosocial changes during pregnancy also have a positive and significant effect on the Internal Health Locus of Control ($B=3.534$, $p=0.031$). An increase in psychosocial changes leads to an average increase of 3.534 points in the Internal Health Locus of Control score.

COVID-19 vaccination status (Reference: Not vaccinated) has a significant effect on the Internal Health Locus of Control as well ($B=7.416$, $p=0.047$). Individuals who have been vaccinated have an Internal Health Locus of Control score that is, on average, 7.416 points higher than those who are not vaccinated.

The variable of Medical and Obstetric Risks/Fetal Health was not found to be a significant predictor of the Internal Health Locus of Control ($B=-1.744$, $p=0.216$). Similarly, birth expectation was not a significant predictor ($B=3.091$, $p=0.121$), nor was the experience of close loss (Reference: No close loss) ($B=-0.519$, $p=0.850$).

In this model, age, COVID-19 phobia, psychosocial changes during pregnancy, and COVID-19 vaccination status were the

Table 2. Factor effecting fetal health locus of control scale/ internal health locus of control

Independent variable	Unstandardized coefficients		Standardized coefficients	t	p	95.0% CI
	B	SE	β			
Constant	39.705	8.927		4.448	<0.001	25.943–57.467
Age	0.477	0.207	0.259*	2.301	0.024	0.065–0.889
C19P-S	-0.529	0.119	-0.864*	-4.456	<0.001	-0.765–0.293
Medical and obstetric risks/fetal health	-1.744	1.398	-0.167	-1.248	0.216	-4.526–1.038
Psychosocial changes	3.534	1.609	0.331*	2.196	0.031	0.332–6.737
The birth expectation	3.091	1.972	0.271	1.567	0.121	-0.833–7.015
The COVID vaccination status	7.416	3.677	0.234*	2.017	0.047	0.100–14.732
Close loss	-0.519	2.737	-0.027	-0.189	0.850	-5.964–4.927

Durbin-Watson=1.766; F=12.220, $p<0.001$; R=0.714; $R^2=0.514$; Adjusted $R^2=0.472$. *: Significance level was accepted as $p<0.05$, C19P-S; COVID-19 phobia scale, dependent variable = Fetal health locus of control scale/ internal health locus of control. CI: Confidence interval; B: Unstandardized regression coefficient; SE: Standard error; β : standardized regression coefficient.

independent variables that significantly predicted the Internal Health Locus of Control. Specifically, an increase in COVID-19 phobia lowers the Internal Health Locus of Control score, while psychosocial changes and being vaccinated against COVID-19 increase it (Table 2).

Factors Affecting Fetal Health Locus of Control Scale/Chance Health Locus of Control

This multiple linear regression analysis aimed to assess how factors such as age, medical and obstetric risks, fetal health, psychosocial adjustments during pregnancy, childbirth expectations, COVID-19 vaccination status, and recent bereavement influence the chance health locus of control variable among pregnant women. The model achieved statistical significance ($F=2.439$, $p=0.025$), with the independent variables accounting for 17.4% of the variance in chance health locus of control ($R^2=0.174$). Furthermore, the Durbin-Watson statistic of 1.829 suggests no autocorrelation in the model.

The constant coefficient of the model was found to be 50.168, meaning that when all independent variables are equal to zero, the chance health locus of control score is 50.168 points ($p<0.001$).

The impact of the age variable on the chance health locus of control is negative, with a B coefficient of -0.165. This indicates that as age increases, the chance health locus of control score decreases by an average of 0.165 points ($p=0.024$).

The impact of the COVID-19 phobia variable on the chance health locus of control is also negative. The B coefficient was found to be -0.372, indicating that an increase in COVID-19 phobia decreases the chance health locus of control score by an average of 0.372 points ($p=0.002$).

The Medical and Obstetric Risks/Fetal Health variable does not have a significant effect on the chance health locus of control ($B=0.255$, $p=0.854$). Similarly, the Psychosocial Changes

During Pregnancy variable also does not have a significant effect on the chance health locus of control ($B=0.992$, $p=0.534$).

The birth expectation variable was not observed to have a significant effect on the chance health locus of control ($B=2.176$, $p=0.267$).

COVID-19 vaccination status (Reference: Not vaccinated): The chance health locus of control scores of vaccinated pregnant women are, on average, 8.975 points higher than those of unvaccinated women ($p=0.016$).

Close loss (Reference: No close loss): The experience of close loss does not have a significant effect on the chance health locus of control ($B=5.255$, $p=0.055$).

In conclusion, age and COVID-19 phobia have been identified as significant negative predictors of the chance health locus of control, meaning that as these variables increase, the chance health locus of control scores decrease. On the other hand, COVID-19 vaccination status is a significant positive predictor, indicating that vaccinated individuals have higher chance health locus of control scores. The other variables do not show a significant effect (Table 3).

Factors Affecting Fetal Health Locus of Control Scale/Powerful Others Health Locus of Control

This multiple linear regression analysis aimed to estimate the influence of factors such as age, medical and obstetric risks, fetal health, psychosocial adjustments during pregnancy, expectations regarding childbirth, COVID-19 vaccination status, and recent loss of a loved one on the powerful others health locus of control variable among pregnant women. The model is statistically significant ($F=4.462$, $p<0.001$). The independent variables in the model explain 27.8% of the variance in powerful others health locus of control ($R^2=0.278$). Additionally, the Durbin-Watson statistic is 1.881, indicating no autocorrelation in the model.

Table 3. Factor effecting fetal health locus of control scale/ chance health locus of control

Independent variable	Unstandardized coefficients		Standardized coefficients	t	p	95.0% CI
	B	SE	β			
Constant	50.168	8.819		5.689	<0.001	32.621–67.715
Age	-0.165	0.207	0.259*	2.301	0.024	0.065–0.889
C19P-S	-0.372	0.117	-0.802*	-3.176	0.002	-0.605–0.139
Medical and obstetric risks/fetal health	0.255	1.381	0.032	0.185	0.854	-2.493–3.003
Psychosocial changes	0.992	1.590	0.122	0.624	0.534	-2.171–4.156
The birth expectation	2.176	1.948	0.252	1.117	0.267	-1.701–6.052
The COVID vaccination status	8.975	3.632	0.374*	2.471	0.016	1.748–16.203
Close loss	5.255	2.704	0.362	1.944	0.055	-0.125–10.635

Durbin-Watson=1.829; F=2.439, p=0.025; R=0.417; R²=0.174; Adjusted R²=0.103. *: Significance level was accepted as p<0.05, C19P-S; COVID-19 phobia scale, dependent variable = Fetal health locus of control scale/ chance health locus of control. CI: Confidence interval; B: Unstandardized regression coefficient; SE: Standard error; β : standardized regression coefficient.

The constant coefficient of the model was found to be 37.054, meaning that when all independent variables are equal to zero, the powerful others health locus of control score is 37.054 points (p<0.001).

The age variable is not a significant predictor of the powerful others health locus of control.

The impact of the COVID-19 phobia variable on the powerful others health locus of control is negative. The B coefficient was found to be -0.143, indicating that an increase in COVID-19 phobia decreases the powerful others health locus of control score by an average of 0.143 points (p=0.037). This result also suggests that COVID-19 phobia has a significant effect on the internal health locus of control.

The Medical and Obstetric Risks/Fetal Health variable does not have a statistically significant effect on the powerful others health locus of control (B=1.182, p=0.142). Similarly, the Psychosocial Changes During Pregnancy variable is not a significant predictor (B=0.563, p=0.542).

The birth expectation variable does not have a significant effect on the powerful others health locus of control (B=1.139, p=0.314).

COVID-19 vaccination status (Reference: Not vaccinated): The effect of being vaccinated on the powerful others health locus of control is not significant (B=-0.339, p=0.872).

Close loss (Reference: No close loss): The experience of close loss is a positive and significant predictor of the powerful others health locus of control (B=5.480, p<0.001). This indicates that pregnant women who have experienced close loss have, on average, 5.480 points higher scores on the powerful others health locus of control compared to those who have not experienced close loss.

In conclusion, COVID-19 phobia significantly decreases the powerful others health locus of control, while experiencing a

close loss significantly increases it. Age, medical and obstetric risks, psychosocial changes, birth expectation, and COVID-19 vaccination status do not have a significant effect on the powerful others health locus of control (Table 4).

Discussion

This study identified age as a significant positive predictor of internal health locus of control, suggesting that older pregnant women are more likely to perceive themselves as capable of managing their health during pregnancy. This may stem from accumulated life experience, greater exposure to health information, and increased confidence in making informed decisions—factors that often accompany age.^[4,22] The heightened awareness of health-related risks among older pregnant individuals may also reinforce their sense of control over the pregnancy process.^[23] These findings point to a developmental shift toward greater internal health agency with age and emphasize the need to strengthen self-efficacy in younger pregnant women through targeted education and support.

In the study, it was found that age is a meaningful and negative predictor of health locus of control dependent on chance. As age increases, women tend to perceive their health and pregnancy processes as less dependent on chance, which may be due to greater knowledge, experience, or a stronger internal locus of control. A review of the literature reveals no prior studies directly addressing this finding. However, based on the positive predictive role of internal health locus of control, it can be inferred that as women age, they are more likely to develop less chance-based control over their health.

Although age was not found to be a significant predictor of the health locus of control focused on powerful others (PODHLC), this finding suggests that pregnant women's trust in external authorities, such as healthcare professionals, may be shaped more by personal experiences, cultural expecta-

Table 4. Factor effecting fetal health locus of control scale/ powerful others health locus of control

Independent variable	Unstandardized coefficients		Standardized coefficients	t	p	95.0% CI
	B	SE	β			
Constant	37.054	5.090		7.279	<0.001	26.926–47.182
Age	0.197	0.118	0.228	1.663	0.100	-0.039–0.432
C19P-S	-0.143	0.068	-0.501*	-2.120	0.037	-0.278–0.009
Medical and obstetric risks/fetal health	1.182	0.797	0.242	1.482	0.142	-0.405–2.768
Psychosocial changes	0.563	0.918	0.112	0.613	0.542	-1.263–2.389
The birth expectation	1.139	1.125	0.214	1.013	0.314	-1.099–3.377
The COVID vaccination status	-0.339	2.097	-0.023	-0.162	0.872	-4.511–3.833
Close loss	5.480	1.561	0.611*	3.511	<0.001	2.375–8.585

Durbin-Watson=1.881; F=4.462, $p<0.001$; R=0.528; $R^2=0.278$; Adjusted $R^2=0.216$. *: Significance level was accepted as $p<0.05$, C19P-S; COVID-19 phobia scale, dependent variable = Fetal health locus of control scale/ powerful others health locus of control. CI: Confidence interval; B: Unstandardized regression coefficient; SE: Standard error; β: standardized regression coefficient.

tions, and belief systems rather than chronological age.^[1,2] This stability across age groups may indicate that reliance on medical authority remains consistent during pregnancy, regardless of age-related factors. Therefore, interventions aimed at strengthening or addressing external health beliefs may need to consider sociocultural context more than demographic characteristics like age.

The negative association between fear of COVID-19 and internal health locus of control suggests that heightened fear can undermine pregnant women's confidence in their ability to manage their own health. This aligns with previous studies indicating that pandemic-related anxiety may impair individuals' internal health agency, particularly during pregnancy when health-related vulnerability is perceived to be higher.^[23] The uncertainty surrounding the safety of both mother and fetus likely contributes to this diminished sense of control,^[2] as fear often disrupts rational health-related decision-making. Additionally, the literature highlights that elevated fear and stress during the pandemic are associated with decreased psychological resilience and increased dependency on external factors.^[3]

Interestingly, this study also found that fear of COVID-19 negatively predicted both chance-based and powerful others health locus of control—an observation not previously reported in the literature. These findings may indicate a shift in coping strategies, whereby women under stress from pandemic-related fear become less likely to attribute their health outcomes either to chance or to external authorities such as healthcare professionals. This pattern could reflect growing skepticism toward external systems, especially during times when healthcare infrastructure may have been perceived as strained or inaccessible. Consequently, pregnant women may have turned toward more individualized, self-directed approaches to health management—adopting proactive behaviors such as strict hy-

giene, distancing, and information-seeking as coping mechanisms rather than relying on chance or trust in others.

Overall, these findings highlight a complex psychological response to pandemic-related fear, wherein pregnant women neither trust themselves fully nor place faith in external authorities or fate. This underscores the importance of integrated prenatal care strategies that address fear and uncertainty, such as evidence-based counseling, routine mental health screening, and reinforcing trust in healthcare systems to help restore balanced health control beliefs during public health crises.

The finding that medical and obstetric risks/fetal health variables did not significantly predict any dimension of health locus of control suggests that objective health status alone may not shape how pregnant women perceive control over their health. While previous research has indicated that high-risk pregnancies can heighten women's focus on health behaviors and control,^[24–26] the lack of such an association in this study may reflect the relatively healthy profile of the sample. It is also possible that, in the context of a widespread external threat like COVID-19, individual medical conditions may be perceived as less influential than broader psychosocial stressors. This highlights the importance of considering the psychological and contextual environment, not just clinical risk, when addressing pregnant women's health beliefs.^[27]

Psychosocial changes directly and positively affect pregnant women's internal health locus of control, while they have been found to be ineffective on the powerful-others-dependent and chance-dependent health locus of control. This indicates that pregnant women see their health as more under their own control, but it does not change their trust in external factors or luck. It is known that psychosocial stress weakens individuals' sense of control over their health.^[28] Access to social

support and healthcare services, in particular, can enhance pregnant women's sense of health control.^[1] Additionally, a high level of psychological well-being during pregnancy positively influences the perception of pregnancy.^[29] Research indicates that deterioration in psychological well-being during pregnancy may lead to mental and emotional problems in both the mother and the baby.^[15–30]

The finding that receiving the COVID-19 vaccine significantly predicts higher internal health control and lower chance-based health beliefs suggests that vaccination may contribute to a stronger sense of personal agency in pregnant women. Those who are vaccinated may perceive themselves as actively protecting their health, thus reinforcing internal control beliefs while reducing reliance on chance or fate. This is consistent with prior findings indicating that vaccination not only reduces fear of infection but also enhances individuals' overall perception of control over their health-related decisions.^[4,24] Interestingly, the absence of a significant relationship between vaccination status and the powerful-others dimension suggests that trust in healthcare professionals remains relatively stable, regardless of vaccination status. This may reflect that while vaccination bolsters personal confidence, it does not necessarily alter the perceived authority or role of health professionals in the pregnancy process. These results emphasize the role of preventive health behaviors—such as vaccination—not only in biological protection but also in shaping psychological constructs like health control orientation during sensitive periods like pregnancy.

The variable of birth expectation has not been found to be a significant predictor of internal health control, powerful-others health control, or chance-related health control. No previous study on this subject has been found in the literature. It can be said that the expectations of pregnant women regarding the birth process do not directly affect their sense of control over managing their overall health. This shows that pregnant women's specific expectations about birth do not significantly alter their beliefs in managing overall health control.

The variable of experiencing a close loss is a significant and positive predictor of health control focus dependent on powerful others, while it is not a significant predictor of internal health control or chance-related health control. This shows that individuals tend to seek more external support and rely on professionals in managing their health when they experience a loss. No study related to this finding has been encountered in the literature. Experiencing a close loss due to COVID-19 can weaken pregnant women's confidence in managing their health. In this case, pregnant women may tend to rely more on healthcare professionals or external strong authorities in controlling their health. Individuals experiencing loss, especially when they need strong support to manage their health, may increase their dependency on doctors or

other healthcare providers. This may reflect the need for individuals experiencing loss to seek more medical assistance or consult with powerful others in their health-related decisions.

Strengths and Limitations of the Study

Examining the psychosocial and health effects of COVID-19 on pregnancy in a multidimensional way, utilizing comprehensive data collection tools, and evaluating data reliability provided through face-to-face interviews can be considered important strengths. However, collecting samples only from Family Health Centers in one region may limit the generalizability of the findings. Furthermore, the subjective nature of the scales used in the study and the data collected through instant responses should be considered, as they may have been influenced by individuals' current psychological states.

Conclusion

Findings indicate that the long-term psychological impact of the COVID-19 pandemic continues to influence pregnant women, particularly by reducing their focus on internal health locus of control and contributing to elevated stress and anxiety levels during pregnancy. Although the data were collected after the pandemic, the results suggest that past experiences and lingering fears related to COVID-19 still shape health-related perceptions and behaviors. Notably, having received the COVID-19 vaccine was associated with a higher internal health control focus, which may support a greater sense of safety and control during pregnancy. Other influential factors, such as psychosocial changes experienced during pregnancy and the experience of recent personal losses, were also found to significantly affect the internal health control perspective.

These findings highlight the enduring psychological footprint of the pandemic and the importance of providing ongoing psychological and physical support to pregnant women in the post-pandemic period. Integration of routine psychological assessments, telehealth services, and culturally responsive counseling into prenatal care remains essential to address persistent challenges and promote maternal well-being. In light of these findings, nursing practice should emphasize the early detection and management of psychological distress among pregnant women, particularly in those affected by pandemic-related stressors. Tailored interventions that strengthen internal health locus of control can enhance maternal coping strategies and perceived control during pregnancy.

Future research should aim to investigate the persistence of these psychological patterns over time and examine the effectiveness of specific nursing interventions in mitigating their effects. Cross-cultural and multi-center studies could offer broader insights into how different health systems address the long-term impacts of public health crises on maternal well-being.

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