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Perceived stress and life satisfaction in pregnant women during the COVID-19 pandemic: the mediating role of fear of childbirth and self-esteem

BACKGROUND

The COVID-19 pandemic adversely affected the functioning and well-being of pregnant women. Negative feelings during pregnancy and the difficult pandemic situation may be the reason behind the perceived fear of childbirth, which can negatively affect the pregnant women's life satisfaction. On the other hand, some protective factors, such as self-esteem, might mediate the relationship between perceived stress and well-being in pregnant women.

PARTICIPANTS AND PROCEDURE

Our study aimed to determine the relationship between perceived stress, fear of childbirth, self-esteem and life satisfaction. A total of 262 Polish pregnant women participated in this study. The Perceived Stress Scale (PSS-10), Fear of Childbirth Scale (KLP II), Self-Esteem Scale (SES) and Satisfaction with Life Scale (SWLS) were used in the study.

RESULTS

The results showed that perceived stress, fear of childbirth and self-esteem acted as significant predictors of life satisfaction in the tested group of pregnant women. Additionally, fear of childbirth and self-esteem played a me-diational role in the relationship between perceived stress and life satisfaction.

CONCLUSIONS

According to Diener's concept, life satisfaction is an important component of one's subjective well-being and health. Therefore, it is important to analyse factors that may mediate the impact of stress on pregnant women's life satisfaction. The present results might suggest that during pregnancy and preparation for childbirth, women should be provided with appropriate psychological care. Support from medical and psychological specialists, as well as from relatives, can reduce the level of perceived fears and strengthen personal resources. Based on the present results, we conclude that the fear of childbirth and the self-esteem of pregnant women should not be underestimated, as they are important predictors of their life satisfaction.

KEY WORDS

self-esteem; life satisfaction; perceived stress; COVID-19; childbirth anxiety

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BACKGROUND

Researchers suggest that COVID-19 may pose a significant health risk both for the pregnant woman and the fetus since pregnant women are particularly susceptible to SARS-CoV-2 infection (Naidu et al., 2022; Zaigham & Andersson, 2020). Pregnancy has been identified as a potential risk factor for susceptibility to and mortality from COVID-19 (Dashraath et al., 2020; Naidu et al., 2022). Pregnant women are particularly susceptible to respiratory infections due to increased body weight, altered body composition, physiology and immunosuppressive status (Jamieson et al., 2006). Therefore, women who were pregnant during the pandemic could fear COVID-19 infection and experience more emotional tension and stress in comparison to non-pregnant women, which could negatively influence their life satisfaction and well-being (Dymecka et al., 2021).

One of the most popular models in health psychology is the theory of subjective well-being. It is a very broad concept that is not defined as one fixed construct. According to Diener and colleagues (1999, 2002), subjective well-being is a cognitive-emotional summary of a person's experiences and life. The authors point out that in order to be characterized by high subjective well-being, one should enjoy high life satisfaction and a large number of positive, and a small amount of negative emotions (Diener et al., 2002). In subjective well-being theory (Diener et al., 1999, 2002; Diener, 2009), life satisfaction can be described as a subjective evaluation of one's life. Diener (1984) stated that life satisfaction plays a very important role in health. A meta-analysis of 140 papers based on subjective well-being theory showed a significant and positive relationship between the level of health and domains of subjective well-being: life satisfaction, affect and satisfaction with various spheres of life (Das et al., 2020). Diener and associates (2017), in their review of empirical research, concluded that life satisfaction and subjective well-being are positively related to one's health. In general, individuals who are satisfied with their life usually have better mental and physical health. According to available research, pregnancy can be a stressful event, which can hurt the life satisfaction and health of pregnant individuals (see Yu et al., 2020). Pregnancy is a period when women are particularly vulnerable to psychological stress, which can have negative consequences for the mother and her unborn child (Khoury et al., 2021; Lebel et al., 2020). Infectious diseases can generate increased levels of anxiety among pregnant women, as morbidity and mortality are often increased in these women. The circulatory and immune systems undergo significant changes during pregnancy and are therefore more susceptible to a variety of infections and their negative psychological consequences (Giesbrecht et al., 2022; Lebel et al., 2020). In general,

studies suggest that the perceived levels of stress during the COVID-19 pandemic were significantly related to two kinds of fear and anxiety: related to childbirth and COVID-19 infection (Dymecka et al., 2021; Masjoudi et al., 2022; Salehi et al., 2020; Taubman-Ben-Ari et al., 2021). Fear of COVID-19 refers to the perceived danger related to COVID-19 infection and its consequences. In pregnant women, it may also reflect the threat posed by COVID-19 infection to their health as well as the health of the unborn child (Giesbrecht et al., 2022). On the other hand, fear of childbirth is usually expressed in the perceived threat to the health of the child and mother, the labour procedure, the possibility of complications and pain, hospitalization, and lack of control over one's own behaviour during the labour (Esteban-Gonzalo et al., 2021; Vismara et al., 2021). It usually represents the perception of four domains of childbirth experiences: own capacity, professional support, perceived safety and participation (Lok et al., 2021). It is hypothesized that fear of COVID-19 infection can be a predictor of fear of childbirth (Dymecka et al., 2021; Taubman-Ben-Ari et al., 2021).

About a third of pregnant women experienced significant stress related to childbirth anxiety and the risk of coronavirus infection during the COVID-19 pandemic (Preis et al., 2020). Some recent research indicates that while the rate of COVID-19 infections in pregnant women is similar to that of the general population, these infections are more severe (increased rates of hospitalizations, ICU admissions and need for mechanical ventilation; Giesbrecht et al., 2022). In pregnant women, infections during pregnancy increase the risk of pre-eclampsia, preterm delivery, stillbirth, and low birth weight of a child (Villar et al., 2021). This suggests that COVID-19 infections pose a serious risk to pregnant women and might be a source of significant distress. Studies have shown that pregnant women experienced an increase in depressive and anxiety symptoms in the early stages of the pandemic related to the fear of contracting COVID-19 (Giesbrecht et al., 2022; Khoury et al., 2021).

Lockdown policies related to the COVID-19 pandemic could contribute to significant stress in society, especially in vulnerable groups such as pregnant women. Pregnancy is a condition that is associated with increased levels of stress (Jesse et al., 2014; Woods et al., 2010). Increased emotional sensitivity, rapid mood changes, disturbances in memory and concentration, and increased susceptibility to fatigue are the main causes of perceived stress in pregnant women (Guszkowska & Langwald, 2014; Rugh et al., 1971; Woody et al., 2017). The COVID-19 pandemic also caused many changes in the healthcare system's functioning. Some medical consultations have been limited or cancelled, many have been replaced by teleconsultations and some hospitals have been

closed or transformed into infectious diseases hospitals. Those conditions could also negatively affect the well-being of pregnant women during the difficult pandemic times. In addition, during these times the perceived stress in pregnant women could be associated with fear of COVID-19 infection and its transmission to the fetus. Due to the threat of COVID-19, social isolation was recommended, which could have reduced the levels of perceived social support in society. Restrictions related to the functioning of hospitals and the impossibility of the partner being present during childbirth probably also had a significant role in coping with pandemic stress in pregnant women (Boekhorst et al., 2021).

Because pregnant women belong to the increased risk group, they have numerous concerns about the health and life of themselves and their child (Maisona et al., 2020). Since pregnant women experienced significant anxiety during the COVID-19 pandemic (see Preis et al., 2020), it is important to search for potential covariates in the relationship between perceived stress and life satisfaction in this particular group. It is very unlikely that the relationship between stress and well-being in pregnant women is direct. Theoretical concepts and research suggest that this relationship can be mediated by various variables. One of them is the fear of childbirth. According to the theoretical model of labour anxiety (Putyński, 1997, 2012; Putyński & Paciorek, 2008), childbirth is a situation related not only to the physiological process of giving birth but also to a process with a very complex psychological and social context. On the one hand, childbirth leads to relief, joy, and euphoria due to the birth of a child. On the other hand, waiting for childbirth may be associated with experiencing depression, fear, and a sense of danger. Expecting to give birth is associated with frequent signs of depression and anxiety, and fears, where fear of childbirth is a strong and significant predictor of fear for one's health and life, which negatively affects the well-being of pregnant women. Putyński's (2012) theoretical concept based on his own research can also be supported by the classical stress theory by Lazarus and Folkman (1984). According to their transactional model of stress, fear and anxiety are part of the emotional experience which mediates between the source of stress and the effects of coping with it (like health or well-being). On this basis, it can be concluded that the specific fear of childbirth will also play this mediating function between perceived stress and life satisfaction in pregnant women. Previously, it was shown that postpartum PTSD mediated the relationship between anxious/ambivalent attachment style and infant-focused anxiety (Hairston et al., 2018). A longitudinal study by Garthus-Nigel and colleagues (2013) showed that subjective labour experiences mediated the association between prenatal anxiety and depression levels and postpartum

PTSD. Additionally, a longitudinal study by Brandão and colleagues (2020) showed that personal control and a sense of mastery during childbirth mediated the relationship of anxiety and depression with post-traumatic stress symptoms. Other studies also show that postnatal anxiety mediated the relationship between personality and postnatal depression (Roman et al., 2019). One research project also confirmed that the partner's emotional response to pregnancy mediated the relationship between pregnancy planning and prenatal mental health (Kazemi et al., 2021). Based on the discussed theoretical concepts and empirical research, it can be concluded that the fear of childbirth may play a mediational function in the relationship between perceived stress and life satisfaction in pregnant women.

The literature shows that self-esteem is also a factor that might have a significant role in pregnant women's life satisfaction. It is based on the perception and assessment of oneself, which is made by evaluating such attributes as physical appearance, intelligence, economic status, morality, etc. Self-esteem is a relatively stable trait over time that is related to our values (Rosenberg et al., 1995). It is significantly and positively related to life satisfaction and well-being measures (Diener & Diener, 1995; Gerymski et al., 2022). What is more, many studies have been conducted showing that self-esteem is the strongest predictor of life satisfaction among other personality variables (e.g. Hong & Giannakopoulos, 1994; Chen et al., 2006; Çivitci, 2010; Zhang & Leung, 2002). Although self-esteem is a very important psychological variable, some researchers claim that it does not receive enough attention in pregnancy research (e.g. Jomeen & Martin, 2005). The mediating role of self-esteem in the relationship between stress and life satisfaction in pregnant women can be supported by a theoretical model of the risk of depression in pregnancy (Jesse et al., 2014). It is based on many theoretical concepts, including the aforementioned transactional stress model of Lazarus and Folkman (1984). According to Jesse and colleagues' (2014) concept, as well as the transactional theory of stress (Lazarus & Folkman, 1984), women's self-esteem is important in a stress transaction. During the primary appraisal, the relationship between an individual and their environment is assessed as a continuous process. It is performed from the perspective of elements relevant to one's well-being and can be defined as irrelevant, favourable or stressful (Lazarus & Folkman, 1984). According to the cognitive appraisal mechanism proposed in the transactional model of stress, the secondary appraisal is triggered as a result of recognizing (in the primary appraisal process) a transaction as stressful. The secondary appraisal concerns the subjective assessment of an individual's ability to take action. It refers to both the source of stress and personal resources. As a result, individuals

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try to eliminate the source of stress and mitigate its effects. In Jesse and colleagues' (2014) model it is hypothesized that self-esteem in pregnant women can act as a coping resource via strengthening the feeling of control over their life. What is more, it is possible that a large burden of stress can lower individuals' self-worth perception, affecting their coping strategies. Jesse and colleagues (2014) claim that self-esteem acts as a mediating resource between stress and both depressive symptoms and well-being. According to the transactional stress model (Lazarus & Folkman, 1984), self-esteem has an important role in the process of primary appraisal, which mediates the relationship between stress and well-being. In the view of that concept, individuals with high self-worth can perceive stressors as less harmful than those of low self-esteem. Also, the usage of particular coping strategies can be related to the levels of self-esteem, as individuals with low self-worth might cope with stress via self-blame strategies (Cascardi & O'Leary, 1992). The mediating role of self-esteem in pregnant women has been confirmed empirically (Jesse et al., 2014). According to Diener's (2009) theory of subjective well-being, symptoms of depression and satisfaction with life are strongly related. In turn, the concept of self-esteem proposed by Rosenberg and colleagues (1995) confirms that self-esteem is one of the most important predictors of well-being. This means that the mediating role of self-esteem may also be present in the relationship between perceived stress and life satisfaction in pregnant women. This was confirmed in groups of non-pregnant people. Hu and colleagues (2016) observed that self-esteem acted as a mediator between loneliness and life satisfaction among adults. In turn, Wang and colleagues (2017) found that self-esteem mediated the relationship between job stress and well-being and occupational burnout.

Similar associations among pregnant women have not yet been confirmed. Therefore, this study aimed to analyse the relationship between stress perceived during the COVID-19 pandemic, fear of childbirth, self-esteem and life satisfaction of pregnant Polish women. Based on the available research and theoretical models, it can be hypothesized that: (1) perceived stress will be related to the fear of childbirth, self-esteem and life satisfaction of pregnant Polish women, and that (2) both the fear of childbirth and self-esteem will act as mediators in the relationship between perceived stress and life satisfaction.

PARTICIPANTS AND PROCEDURE

PARTICIPANTS

The research was conducted during the first wave of the COVID-19 pandemic, from 15 March 2020 to 30 May 2020. Due to the epidemiological situation, the respondents completed the questionnaires via the Internet. At that time, Poland was in full lockdown and therefore it was impossible to reach the respondents traditionally. The online test set was prepared by one of the authors of this manuscript. Then, the authors and trained research assistants were asked to share the link to the survey on social media. Links to the study were posted on groups related to pregnancy and pregnant women. The link to the survey was publicly available.

Two hundred sixty-two pregnant individuals were examined. Participants' gender identity was measured with an open-field question with an additional description: "Please let us know what you feel your gender to be, not what your ID indicates". All study participants described themselves as "women"; therefore that category will be used throughout the rest of the manuscript. The inclusion criteria were as follows: (1) being of age over 18, (2) having Polish as their mother tongue, (3) being able to give informed consent. Exclusion criteria were as follows: (1) having an intellectual disability or diagnosis of mental illness, (2) being hospitalized in a psychiatric ward within 30 days before the study, (3) inability to complete the questionnaire for any reason. All study participants had the option to withdraw from the study at any moment, without giving any reason. The respondents were informed of full anonymity during their participation in the study, and then they were asked to consent to participate in the study. This research project was conducted by the guidelines set by the Ethics Committee of the University of Opole (approval number: KEBN 15/2021).

According to the Central Statistical Office of Poland (2021), 356 540 children were born in Poland in the year 2020. However, Poland lacks detailed data on the socio-demographic data of pregnant women. Therefore it is unknown whether the present sample is representative of the population of pregnant women in Poland.

MEASURES

Perceived Stress Scale. The perceived level of stress was measured with the Perceived Stress Scale (PSS-10; Cohen et al., 1983) in Poprawa's (2003) Polish adaptation. It consists of 10 questions on a 5-point scale from 0 (*never*) to 4 (*very often*). A higher PSS-10 score indicates higher subjectively perceived stress. It measures the subjective evaluation of perceived stress with questions such as "In the last month, how often have you felt nervous and stressed?". The Perceived Stress Scale has been previously used and validated on a population of pregnant women (Yokokura et al., 2017). In the present study, PSS-10 obtained good reliability (Cronbach's α = .91).

Labour Anxiety Questionnaire. Fear of childbirth was tested with the Polish Labour Anxiety Questionnaire (KLP II; Putyński & Paciorek, 2008). It is a 9-item questionnaire with a 4-point answer scale from 1 (*definitely not*) to 4 (*definitely yes*). A higher KLP II score indicates higher subjective fear of childbirth. The scale consists of items such as "I feel like there will be some unforeseen complications during the labour". It is a Polish questionnaire specifically designed and validated on a group of pregnant women. All the information about the validation process and results are available in the paper by Putyński and Paciorek (2008). In the present study, KLP II obtained good reliability (Cronbach's α = .82).

Self-Esteem Scale. Self-esteem was measured with the Self-Esteem Scale (SES; Rosenberg, 1979). It was adapted to Polish by Łaguna and colleagues (2007). SES is a 10-item questionnaire on a 4-point answer scale from 1 (*strongly agree*) to 4 (*strongly disagree*). SES includes questions such as "I feel that I have several good qualities". A higher SES score means higher self-esteem. The Self-Esteem Scale has been previously used on a sample of pregnant women (Jesse et al., 2014). In the present study, SES was characterized by good reliability (Cronbach's α = .92).

Satisfaction with Life Scale. Lastly, the Satisfaction with Life Scale (SWLS; Diener et al., 1985) in the Polish translation of Czapiński (2004) was used. It consists of 5 questions on a 7-point scale from 1 (*I definitely disagree*) to 7 (*I definitely agree*). It consists of such items as "I am satisfied with my life". A higher SWLS score indicates a higher subjective evaluation of one's life satisfaction. Previous studies support its use on a sample of pregnant women (Yu et al., 2020). In the present study, SWLS obtained good reliability (Cronbach's α = .87).

STATISTICAL ANALYSIS AND SENSITIVITY POWER ANALYSIS

No method of correcting the missing data was applied due to the completeness of the collected data. The level of α = .05 was adopted as the threshold value for statistical significance. To verify the proposed research questions, Pearson's *r* correlation and mediation analysis using the PROCESS v4.1 macro (Hayes, 2017) was performed. A bootstrapped mediation analysis (5000 samples;

Table 1

Characteristics of the studied sample (N = 262)

	M	SD	Min	Max
Age	28.40	3.78	18.00	39.00
Week of pregnancy	31.58	7.09	7.00	42.00

	n	%
Education		
Basic	1	0.38
Vocational	6	2.29
Secondary	68	25.95
Higher	187	71.37
Place of residence		
Village	87	33.21
Town (< 100 000 citizens)	73	27.86
City (> 100 000 citizens)	102	38.93
Family childbirth planning		
Yes	220	83.97
No	42	16.03
Pregnancy		
First	144	54.96
Subsequent – second	88	33.59
Subsequent – third	23	8.78
Subsequent – fourth	4	1.53
Subsequent – fifth and more	3	1.15
Childbirth		
First	171	65.27
Subsequent – second	80	30.53
Subsequent – third	9	3.44
Subsequent – fourth	1	0.38
Subsequent – fifth and more	1	0.38
Chronic diseases		
No	190	72.52
Diabetes	5	1.91
Hypertension	6	2.29
Cholestasis	2	0.76
Hypothyroidism	48	18.32
Other (unspecified)	23	8.78
Trimester		
First	10	3.82
Second	36	13.74
Third	216	82.44

Table 2

Results of Pearson's r correlation analysis (N = 262)

	M	SD	1	2	3	4
1. Perceived stress	20.60	8.23	–			
2. Fear of childbirth	15.24	5.51	.46***	–		
3. Self-esteem	29.49	7.73	–.27***	–.09	–	
4. Life satisfaction	24.63	5.34	–.44***	–.34***	.29***	–

Note. ***p < .001.

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Figure 1

Results of the PROCESS model 4 mediation analysis: visualisation (N = 262)
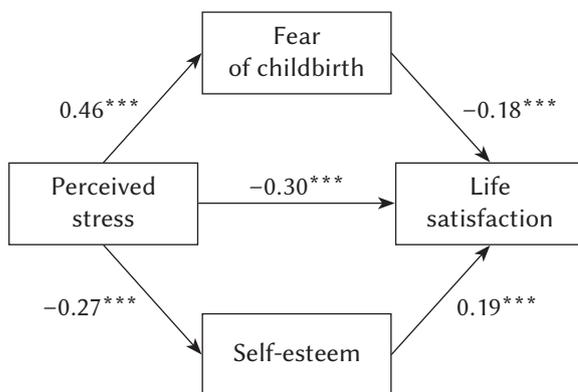
Note. ***p < .001.

Preacher & Hayes, 2008) using Model 4 was used (Hayes, 2017). PROCESS Model 4 allows for assessment of the mediating role of one or more mediators. Therefore, it was decided to include all 4 variables in one analysis. Sensitivity power analysis showed that for $\alpha = .05$ and $1\text{-}\beta = 0.80$, the obtained sample is not able to reliably detect effects smaller than $\rho = .17$ as statistically significant in the two-tailed analyses. Therefore, the present study allows one to reliably discuss only moderately small, moderate and large effect sizes and does not allow the assessment of very small effects. Based on the aforementioned calculations, the results drawn from the present sample can be used to draw reliable conclusions. All effect sizes were evaluated based on Cohen's (1988) recommendations: small effects were considered as between $r = .10$ and $r = .30$; moderate between $r = .30$ and $r = .50$; and strong between $r = .50$ and $r = .99$.

RESULTS

First, it was decided to verify the relationships between tested variables. For that purpose, Pearson's r correlation was applied. The analysis indicated that the levels of perceived stress were significantly and positively related to fear of childbirth scores, and negatively to the self-esteem and life satisfaction results of the Polish pregnant women. Additionally, there was a significant negative association between fear of childbirth and life satisfaction in the tested group. Self-esteem was also positively related to the life satisfaction scores in tested pregnant women. The effect size measures show that most significant relationships had moderate strength. For more detailed information, see Table 2.

In the next step, a mediation analysis was used. The results show that all tested paths were statistically significant. Simplified results are available in Figure 1. More detailed results can be found in Table 3.

Mediation analysis results show that perceived stress was a significant and negative predictor of self-esteem and life satisfaction in tested pregnant women. PSS-10 scores also played the role of a positive predictor of the fear of childbirth scores. Additionally, fear of childbirth and self-esteem were significant predictors of the SWLS scores: lower fear of childbirth and higher self-esteem indicated higher life satisfaction. Both tested indirect effects were significant. Therefore, fear of childbirth and self-esteem significantly mediated the relationship between perceived stress and life satisfaction.

DISCUSSION

The current study analysed the relationship between perceived stress, fear of childbirth, self-esteem and life satisfaction in pregnant Polish women. It was found that self-esteem and fear of childbirth acted as mediators in the relationship between perceived stress and life satisfaction in pregnant women during the COVID-19 pandemic.

In the present study, the level of perceived stress experienced by the studied pregnant women during the pandemic was higher in comparison to the Polish population norms (Dymecka et al., 2021; Juczyński & Ogińska-Bulik, 2009). On the other hand, the reported life satisfaction of pregnant women was higher in comparison to the norms based on 61 Pol-

Table 3

Results of the PROCESS model 4 mediation analysis (N = 262)

			R^2	β	SE	p	LLCI	ULCI
X	→	M_1	.22	.46	.03	< .001	.24	.38
X	→	M_2	.08	−.27	.05	< .001	−.36	−.14
M_1	→	Y		−.18	.05	.003	−.29	−.06
M_2	→	Y	.25	.19	.03	< .001	.06	.21
$X (M_1 \& M_2)$	→	Y		−.30	.04	< .001	−.28	−.12
Indirect effect of M_1			–	−.08	.03	–	−.15	−.03
Indirect effect of M_2				−.05	.03	–	−.11	−.02

Note. X – perceived stress; M_1 – fear of childbirth; M_2 – self-esteem; Y – life satisfaction.

ish pregnant individuals who suffered complications. Unfortunately, Polish normalization did not include women with uncomplicated pregnancies (Juczyński, 2001). Pregnancy is associated with many changes and challenges that a woman must face. That is probably why many studies have indicated that during pregnancy, stress levels are higher than in the general population (see Chaaya et al., 2010). The pandemic itself has significantly contributed to the increased stress levels in the Polish general population and pregnant individuals (Dymecka et al., 2023a, b; Mikolajkow & Małyszczak, 2023). Almost a third of pregnant Polish women experienced increased stress related to feeling unprepared for childbirth or the risk of COVID-19 infection (Ilska et al., 2021a). Pandemic stress during pregnancy could be associated with fear of the course of childbirth, fear of being unprepared and changes in the organization of childbirth, the lack of family deliveries in some hospitals, and with loneliness in the hospital (Dymecka et al., 2021; Ilska et al., 2021b). Therefore, the stress of pregnant women would be associated with fear of childbirth, which was also confirmed in this study.

This study results also underline that fear of childbirth was a mediator in the relationship between perceived stress and life satisfaction in pregnant Polish women. Greater perceived stress related to the pandemic could expose pregnant women to a stronger fear of childbirth, which could have resulted in decreased life satisfaction. Fear of childbirth is usually associated with a feeling of a threat to the health of the child and mother, the possibility of complications, being in the hospital, as well a lack of control over one's behaviour (Geissbuehler & Eberhard, 2002). Some of these problems were probably exacerbated by the pandemic, due to the lack of family births, the closing of hospital wards, or the avoidance behaviour of the staff due to the risk of infection (Brooks et al., 2020; Dymecka et al., 2021). Fear of childbirth has many negative consequences for the physical health

and life satisfaction of pregnant women. It can disturb the joy of pregnancy and negatively affect the course of delivery (Nilsson et al., 2012; Ryding et al., 1998). Due to hormonal and physiological changes, pregnant women are more sensitive to modifications in their environment, and more susceptible to emotional problems (Heron et al., 2004). Therefore, it may be negatively related to women's life satisfaction (Pazzagli et al., 2015; Saisto & Halmesmäki, 2003; Webster et al., 2011; Yu et al., 2020).

The present study also indicated that self-esteem was negatively associated with perceived stress, and positively with life satisfaction. What is more, self-esteem acted as a significant mediator in the relationship between perceived stress and life satisfaction. The negative relationship between self-esteem and stress has been confirmed in many studies, which indicate that the lower the self-esteem is, the higher is the level of perceived stress (Dolatian et al., 2013; Hwang, 2021). Self-esteem is important for well-being and is associated with a positive attitude towards oneself and one's own life. Research indicates that self-esteem may act as a significant predictor of well-being of pregnant women (Jomeen & Martin, 2005). Therefore, it is possible that the perceived stress in pregnant women is not a direct predictor of their life satisfaction and that this relationship might be mediated by self-esteem. Pregnancy during a pandemic was probably associated with greater stress and being overwhelmed by the unexpected lockdown. Therefore, the high levels of personal resources, such as self-esteem, probably helped pregnant women effectively cope with the pandemic difficulties. Knowing that one is competent and valuable can add self-confidence and serve as a resource for coping in an uncertain pandemic situation. Awareness of one's own internal resources and positive self-evaluation is very important in a situation where sources of social support may be limited. Previous studies have shown that resources such as self-esteem may have a cop-

ing function against depressive disorders in pregnant women (Jesse & Swanson, 2007), and concluded that self-esteem may be one of the most important internal resources in pregnant women (Jesse et al., 2014). The results of these studies show that self-esteem is very important, especially during the pandemic when support was severely limited due to isolation and stressful situations.

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LIMITATIONS

The present study is not free from limitations. The results are based on correlation and regression coefficients calculated from cross-sectional data. Even due to the strong theoretical and empirical evidence behind the proposed model, a longitudinal study should be carried out to verify the hypothesized mediation, because the results do not allow one to indicate the influence or the direction of the tested relationships. Also, international research should be carried out to verify the significance of the proposed model in different cultural conditions. Since the present results are based on the Polish population, they cannot be extrapolated to other cultural groups. The present data should also be compared to datasets from other countries using invariance analysis. What is more, based on the sociodemographic data presented in Table 1 and due to the data collection method, it can be assumed that our sample was not representative. Additionally, this manuscript shows the results for non-specific variables; in other words, it would be more beneficial to measure pandemic-specific and pregnancy-specific variables in comparison to general measures of perceived stress or self-esteem. Lastly, we did not measure many important variables which could have influenced our results. Since relational and personal resources play a significant role in dealing with pandemic difficulties, it can be assumed that providing support and care to pregnant women will be a factor that will significantly reduce the fear of childbirth during the COVID-19 pandemic. This limitation should be corrected in future studies on COVID-19 in pregnant women.

CONCLUSIONS AND RECOMMENDATIONS

The theoretical background and empirical studies suggest that the relationship between distress and well-being is not straightforward. The results of this study indicated that fear of childbirth and self-esteem acted as mediators in the relationship between perceived stress and life satisfaction in pregnant Polish women. According to Diener's (2009) concept, life satisfaction is an important component of one's subjective well-being and health. Therefore, it is important to analyse factors that may mediate the impact of stress on pregnant women's life satisfaction. The present results might suggest that during pregnancy and preparation for childbirth, women should be provided with appropriate psychological care. Support from medical and psychological specialists, as well as from relatives, can reduce the level of perceived fears and strengthen personal resources. Based on these results, it should be concluded that the fear of childbirth and the self-esteem of pregnant women should not be underestimated, as they are important predictors of their life satisfaction.

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