

Research Article

The investigation of changes in health-related quality of life before and after giving birth in a sample of Romanian women

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Abstract

Pregnancy is an important and meaningful period of transition to motherhood. It can be seen as a socially, physically, psychologically, and culturally challenging and transformative period, and may affect women's physical and mental health. Objectives of this study are to investigate significant differences in health-related quality of life and indicators of mental health in women during pregnancy and after giving birth and to explore the association patterns between these variables during pregnancy and after giving birth. The study included 57 Romanian women enrolled from July 2019 until the end of April 2020 through Facebook groups dedicated to pregnant women and mothers, forums, and support groups. The women completed the set of questionnaires twice: during pregnancy and one month after giving birth. The participants reported significantly lower levels of depressive symptoms in the second semester of pregnancy compared to the assessment conducted one month after giving birth. Physical functioning, affectionate expression, and vitality proved to significantly improve after giving birth. Emotional well-being, social functioning, and cohesion seem to lower significantly after giving birth. The results of the study can be used as a basis for designing, planning, and implementing appropriate interventions for women by healthcare providers and policymakers.

Keywords: health-related quality of life; pregnancy; birth; Romania; changes.

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Pregnancy is an important and meaningful period of transition to motherhood. It can be seen as a socially, physically, psychologically, and culturally challenging and transformative period, and may affect women's physical and mental health (Lou et al., 2017). The emotional health of the pregnant woman is important not only to the mother-to-be herself, but also for the physical and psychological development of her child, as well as for the well-being of the entire family (Røsand et al., 2011).

Worldwide, many women are looking forward to having children, and overall, most of them experience pregnancy positively. In some cases, the physical, hormonal, and emotional changes may lead to sadness, anxiety, and fear which for some women are only temporal states and might disappear quickly, but for some mothers-to-be might remain and develop into more serious conditions, such as peripartum depression (Eke & Onyenirionwu, 2019).

A systematic review published in 2018 indicates that the quality of life of pregnant women compared to women of the same age who were not pregnant was significantly lower (Lagadec et al., 2018).

Biological and hormonal changes that occur during pregnancy can trigger changes in self-esteem in pregnant women (John & Manriquez, 2018). Pregnant women with a low self-esteem report poor physical and mental health and they have a higher level of vulnerability that can



promote the development of mental conditions, such as difficulties in managing anger, depression, anxiety, and interpersonal relationships (Santos et al., 2016). During pregnancy, approximately 9-13% of the women experience depression, and 13-15% of them experience anxiety (McLeish & Redshaw, 2017). Moreover, depressed women are more likely to report loneliness which is predicted to have a constant trajectory over a long period of depressive symptoms (Rokach, 2007). This leads to lower self-esteem which might determine a woman to neglect her own health and the health of her child(ren), and may occasionally lead to emotional and physical abuse (Mandai et al., 2018). Maternal stress has a negative effect and a long-term influence on the development of the unborn, leading to future socio-emotional problems, higher negative emotionality, an increased rate of behavioral problems (substance use and abuse), poor emotional regulation, and high risk for developing anxiety disorders (Howard et al., 2014; Weis & Renshon, 2019; Zietlow et al., 2019).

Women are more likely to experience depression and anxiety during pregnancy and in the postnatal period if they: (1) feel socially isolated, feel like they have low social and emotional support in general, (2) have no partner, (3) have low income, or (4) are aged under 20 years (Lucas et al., 2019; Satyanarayana et al., 2011). One of the strongest predictors of depressive symptoms is a history of depression (Satyanarayana et al., 2011). Other risk factors for depressive symptoms are adjustment to motherhood, limited social activities, previous fetal loss, difficulties in pregnancy and actual concerns about the pregnancy (Furber et al., 2009), lack of support given by the partner, being a single mother, previous history of still birth, and a low quality of marital relationship (Adewuya et al., 2007).

The quality of the relationship with the partner is very important and it depends on certain factors. Depressive symptoms and social support have been found to be significant factors of health-related quality of life among pregnant women (Liu et al., 2013). Furthermore, poor emotional health of pregnant women was associated with an increased number of prenatal visits, fetal surveillance, and more frequent use of hospital resources (Liu et al., 2013). A lower level of social and physical functioning has been associated with a higher risk of preterm birth and/or low birth-weight infants (Liu et al., 2013). Perceived stress of both partners was associated with a low level of dyadic consensus and affectional expression (Baldoni et al., 2020). Partners experiencing high levels of stress are more likely to be less satisfied with their relationship, tend to report less agreement and emotional affection (Baldoni et al., 2020).

During pregnancy some factors were significantly associated with the quality of life of pregnant women: poor emotional functioning, depressive symptoms, sociodemographic characteristics (race- African-American), social support, clinical conditions on health-related quality of life (Nicholson et al., 2006), adverse pregnancy histories (fetal death, repeated spontaneous abortion, preterm deliveries, early neonatal deaths) (Couto et al., 2009), physical functioning (health problems influence daily activities), role-physical (everyday roles, such as work, are negatively influenced by problems in physical health), bodily pain, social functioning (health problems interfere with social activities), role-emotional (everyday roles, such as work, are negatively influenced by emotional problems) (Hama et al., 2008), problems with diet or treatment regimens, sleep problems, irritability, disturbed body image, skin changes (striae, melasma), urinary frequency, heart burn, stomach pain, concerns related to the child's gender (due to sociocultural context, as some societies manifest preference for a male child), childbirth related concerns (delivery pain, problems with natural delivery, fear of the unknown and fear for episiotomy, negative experiences with the delivery process, intra-delivery death, vaginal examination, the use of forceps and vacuum, the risk of damage and complications to both mother and baby) (Kazemi et al., 2017).

In the postpartum period, research indicated that there were several factors that correlated with quality of life: emotional role, physical role, education (secondary or university), the parity, health problems during pregnancy (high blood pressure, nausea, anxiety and gestational diabetes), caesarean section, third/fourth degree perineal tears while giving birth, involved episiotomy, premature newborn, the mother being admitted to an intensive care unit, hospital readmission, the newborn being hospitalized, the gestational age of women at the moment of giving birth, babies feeding type (formula or breast-fed), having a lower quality of life before pregnancy, the mode of delivery (emergency caesarean section and caesarean section due to medical indication affected the quality of life years after giving birth), illness, breastfeeding difficulties, problems in the romantic relationship (Morin et al., 2017).

Objectives

The present study derived its objectives from the findings, according to which pregnant women's mental health and quality of life depend on a large number of intra- and interpersonal factors that further affect the way they adapt to the challenges of birth and the way they take care of the newborn. As Martínez-Galiano et al. (2019) suggested, there is a plethora of studies that investigate specific aspects of different stages of pregnancy, birth, and the postpartum period,

however, health-related quality of life during pregnancy is understudied (Morin et al., 2017). Thus, the first objective of the present study was to investigate whether there were significant differences in health-related quality of life and indicators of mental health in women during pregnancy and after giving birth. The second objective was to investigate the association patterns between these variables during pregnancy and after giving birth.

Method & Procedure

Participants

The enrollment of the participants began in July 2019 and continued until the end of April 2020. It took place through 94 Facebook groups dedicated to pregnant women and mothers, forums, and support groups. A total of 320 persons were interested in the study, of which 220 (68.75%) participants passed the screening stage (completed the first assessment during pregnancy). Those who did not meet the criteria of eligibility (Romanian residence, age above 18 years, being pregnant) were excluded. Finally, the study included 57 Romanian women who were eligible (completed the assessment during pregnancy and the assessment one month after birth), with a mean age of 29.27 years ($SD = 4.79$, min = 20, max = 38) who met all the inclusion criteria and completed the set of questionnaires twice: during pregnancy and one month after giving birth. After providing an online informed consent, participants completed the online questionnaire packets that took 25 minutes to fill. The present research received the approval of the Committee of the Department of Psychology (Babes-Bolyai University) by being coordinated by one of its employees.

Instruments

Demographic variables: age, ethnicity, level of education, current residence, employment, marital status, if it is the first pregnancy, if she had complications during the previous pregnancy and the estimated date of birth.

Depression was measured with the Beck Depression Inventory-II (BDI; Romanian adaptation David & Dobrea, 2012) (Beck et al., 1979). BDI is a 21-item scale developed for assessing the severity of depression in normal and psychiatric populations (Hubley, 2014). Higher scores mean a higher severity of symptoms. Internal consistency indices of the BDI are usually above .90. For the present sample, the internal consistency indices for the BDI were .85 (number of items = 21).

Pregnancy-related anxiety was measured with the Pregnancy-Related Anxiety Questionnaire-Revised 2 (PRAQ-R2) (Huizink et al., 2016). Participants were asked to report for each statement their response on a 5-point Likert scale from "Absolutely irrelevant" to "Very relevant". Three subscales were developed: 1) the fear of giving birth, 2) concerns about having a child with a disability, and 3) concerns about one's own appearance. Cronbach's alpha scores were good for the entire scale, having coefficients above .80, which means that PRAQ-R2 has a good reliability level. For the present sample, the internal consistency indices for the PRAQ-R2 were .88 (number of items = 10).

Health-related quality of life was assessed with the Health-related Quality of Life-Short Form Scale 36, a very popular tool for assessing health-related quality of life (SF-36) (Ware et al., 1980). SF-36 comprises eight scales: physical functioning, physical role, body pain, general health, vitality, social functioning, emotional role, and mental health (Ware et al., 1980). SF-36 was estimated to have a reliability score above 0.70, although scores can vary depending on the sample population (Gandek et al., 2004). For the present sample, the internal consistency indices for the SF-36 were .84 (number of items = 36).

Marital satisfaction and adjustment was measured with the 32-item Dyadic Adjustment Scale (DAS) (Spanier, 1976). Participants had to rate their answers on a 6-point Likert scale consisting of ranging from "always agree" to "always disagree". The scale has four subscales: Dyadic Consensus (the degree to which the couple agrees with important aspects of the relationship), Dyadic Satisfaction (the degree to which the couple is satisfied with their relationship), Dyadic Cohesion (degree of closeness and shared activities experienced by the couple) and Affective Expression (degree of demonstrations of affection and sexual relations). For the present sample, the internal consistency indices for the DAS were .83 (number of items = 32).

Self-esteem was measured with the Rosenberg Self-esteem scale (Rosenberg, 1965) (GSES-Romanian Adaptation - Băban et al., 1989). The SES measures self-esteem as a one-dimensional construct (Rosenberg, 1965). This is a 10-item scale that measures overall self-worth and includes both positive and negative feelings about oneself. Higher scores (of each subscale, as well as of the total score) indicate a higher self-esteem. For the present sample, the internal consistency indices for the SES were .87 (number of items = 10).

Loneliness was measured with the UCLA Loneliness Scale, Version 3 (Russell et al., 1980). UCLA is a scale of 20 items designed to measure subjective feelings of loneliness and feelings of social isolation. Participants rate each item on a scale of 1 (Never) to 4 (Often) (Russell et al., 1980). UCLA loneliness scale has a very good internal consistency, the alpha coefficient ranging from 0.89 to 0.94. It also has a good test-retest reliability, with a coefficient of .73. For the present sample, the internal consistency indices for the UCLA were .91 (number of items = 20).

Data Analysis

The data collected through the first assessment during pregnancy and the second assessment after giving birth (one month) was analyzed with the “SPSS 20 Statistics” program. Descriptive analysis were performed for pointing out the characteristics of collected data. A paired-samples t-test was applied in order to compare the results of the same sample of pregnant women ($N = 57$) in the two temporal moments (prenatal and postnatal) for loneliness, depression, self-esteem, marital satisfaction, and quality of life. Also, it was assessed the association patterns between all the variables during pregnancy and after giving birth by using correlation analyses.

Results

The descriptive characteristics of the data are presented in Table 1.

The investigation was continued by comparing the assessed variables before and after giving birth. Since most of the data did not follow a normal distribution, the Wilcoxon non-parametric paired-samples t-test was performed. Effect size was calculated according to the formula: $r = Z/\sqrt{N}$ (Rosenthal, 1994). Significant differences are presented in Table 2.

Table 1.
Descriptive Statistics during Pregnancy and After Birth

Variable	T1				T2			
	M (SD)	Min- Max	Kolmogorov	p	M (SD)	Min- Max	Kolmogorov	p
Score RSE (self-esteem)	29.86 (6.26)	5-40	.14	.01	29.35 (6.59)	8-40	.14	.01
Score PRAQ-R2 (pregnancy-related anxiety)	23.36 (8.72)	9-50	-	-	-	-	-	-
Score BDI (depression)	9.80 (6.74)	0-34	.11	.17	13.33 (8.53)	1-41	.18	p < .001
DAS (consensus subscale)	47.93 (14.77)	0-64	.24	p < .001	48.53 (12.88)	3-65	.17	.01
DAS (affectional expression subscale)	6.65 (4.10)	0-11	.25	p < .001	9.44 (2.56)	1-12	.16	.02
DAS (marital satisfaction subscale)	39.50 (6.87)	13-50	.21	p < .001	38.88 (8.18)	9-53	.19	p < .001
DAS (cohesion subscale)	17.45 (3.70)	4-19	.16	.01	14.02 (3.70)	4-19	.15	.03
Score UCLA (loneliness)	40.20 (11.24)	13-75	.09	.20	42.04 (9.30)	24-61	.08	.20
SF 36 (physical functioning scale)	54.49 (21.62)	6-100	.11	.16	78.68 (20.42)	10-100	.19	p < .001
SF 36 (role limitations due to physical health scale)	3.94 (4.14)	0-10	.26	p < .001	3.81 (3.96)	0-10	.25	p < .001
SF 36 (role limitations due to emotional problems subscale)	19.42 (18.87)	0-40	.26	p < .001	22.53 (19.28)	0-40	.33	p < .001
SF 36 (vitality subscale)	54.70 (21.5)	5-100	.12	.17	63.42 (22.56)	0-100	.11	.20
SF 36 (emotional well-being subscale)	72.17 (21.60)	12-100	.19	p < .001	72.17 (21.56)	0-100	.11	.20
SF 36 (social functioning subscale)	62.72 (25.06)	0-100	.28	p < .001	75.91 (24.98)	0-100	.18	p < .001
SF 36 (pain subscale)	61.88 (19.83)	20-100	.19	p < .001	63.07 (19.83)	13-100	.11	.19
SF 36 (general health)	70.62 (18.01)	25-100	.13	.10	71.23 (16.44)	30-100	.14	.04

Table 2.

Significant Differences in the Assessed Variables during Pregnancy (Second Trimester) and After Giving Birth, N = 44

VARIABLES		M (SD)	Z	p	r
Depression (BDI)	T1	9.68 (6.13)	-3.15	p < .001	.47
	T2	13.76 (8.91)			
Physical functioning (SF-36)	T1	53.34 (21.43)	-4.59	p < .001	.69
	T2	78.67 (21.16)			
Vitality (SF-36)	T1	53.37 (22.01)	-2.04	p < .001	.30
	T2	60.96 (33.17)			
Emotional well-being (SF-36)	T1	71.12 (22.34)	-3.04	p < .001	.45
	T2	60.96 (23.17)			
Social functioning (SF-36)	T1	75.57 (26.68)	-2.13	.03	.32
	T2	65.00 (26.19)			
Affectional expression (DAS)	T1	6.71 (4.11)	-4.02	p < .001	.60
	T2	9.53 (2.39)			
Cohesion (DAS)	T1	17.30 (5.22)	-4.49	p < .001	.67
	T2	13.42 (3.69)			

As seen in Table 2, the results indicate statistically significant differences in depressive symptoms between the two assessments. More specifically, the assessed participants reported significantly lower levels of depressive symptoms in the second semester of pregnancy compared to the assessment conducted one month after giving birth ($Z = -3.15$, $p < .001$), with a small to medium size effect of 0.47. Regarding the quality of life, physical functioning ($Z = -4.59$, $p < .001$), and vitality ($Z = -2.04$, $p < .001$) proved to significantly improve after giving birth, differences in physical functioning attaining a medium size effect ($r(42) = .69$) and vitality a small size effect ($r(42) = .30$). Moreover, emotional well-being ($Z = -3.04$, $p < .001$) and social functioning ($Z = -2.13$, $p < .05$) seem to lower significantly after giving birth, the difference in emotional well-being attaining a small to moderate size-effect ($r(42) = .45$), and social functioning a small size-effect ($r(42) = .32$). Finally, two components of marital satisfaction indicated statistically significant differences between the two assessments: affectional expression ($Z = 4.02$, $p < .01$), and cohesion ($Z = -4.49$, $p < .001$), both with medium size-effects ($r(43) = .60$) for affectional expression, and ($r(42) = 0.67$) for cohesion.

In what concerns the correlation, an analysis between all variables in the period during pregnancy was conducted and the significant results obtained between a series of variables, were reported according to the significance level of .01 and .05 (Results are presented in Table 3).

Table 3.
Correlation analysis between variables in the second semester of pregnancy

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	-															
2	.57**	-														
3	.44**	.50**	-													
4	.33*	.29	.46*	-												
5	.21	.17	.54**	.70**	-											
6	.38*	.31*	.42**	.64**		-										
7	.32*	.13	.26	.45**	.61**	.29*	-									
8	.69**	.48**	.35*	.54**	.38*	.58**	.31*	-								
9	-.12	-.36*	-.26	-.62**	-.65**	-.51**	-.40**	-.37*	-							
10	-.02	-.26	-.32**	-.41**	-.59**	-.08	-.43**	-.21	.54**	-						
11	.14	.11	.28	.40**	.54**	.29	.43**	.26	-.52**	-.55**	-					
12	-.01	-.18	.47**	.30	.69**	.23	.26	-.08	-.15	.05	.35*	-				
13	.16	.00	.43**	.02	.16	.02	.14	.10	.14	-.02	.13	.83**	-			
14	.19	.083	.40*	.35*	.71**	.20	.37*	.19	-.34*	-.46**	.16	.57**	.24	-		
15	.15	.09	.33*	.38*	.66**	.13	.36*	.17	-.41**	-.55**	.41**	.70**	.35*	.73**	-	
16	.22	-.00	.46**	.12	.38*	.12	.25	.06	.06	.02	.21	.94**	.90**	.48**	.56**	-

Note

** Correlation is significant at the 0.01 level (2-tailed).

¹ Physical functioning, ² Role limitations due to physical health, ³ Role limitations due to emotional health, ⁴ Vitality, ⁵ Emotional well-being, ⁶ Social functioning, ⁷ General health, ⁸ Pain, ⁹ Depressive symptoms, ¹⁰ Loneliness, ¹¹ Self-esteem, ¹² Consensus, ¹³ Affectional expression, ¹⁴ Satisfaction, ¹⁵ Cohesion, ¹⁶ Marital satisfaction general score



Table 4.
Correlation analysis between variables one month after giving birth

1	-																
2	.05	-															
3	.21	.57**	-														
4	.31*	.25	.59**	-													
5	.31*	.25	.59**	1.00**	-												
6	.22	.48**	.40**	.40**	.40**	-											
7	.22	.10	.23	.61**	.61**	.33*	-										
8	.31	.23	.34*	.28	.28	.48**	.31*	-									
9	-.23	-.15	-.47**	-.86**	-.86**	-.29*	-.62**	-.22	-								
10	-.27	-.19	-.40**	-.71**	-.71**	-.11	-.51**	-.21	.70**	-							
11	.46**	.24	.29	.39**	.39**	.41**	.32*	.17	-.40**	-.37*	-						
12	.27	.22	.21	.22	.22	.20	.06	.04	-.23	-.34	.78**	-					
13	.09	.32*	.48**	.41**	.41**	.35*	.34*	.31	-.48**	-.47**	.53**	.41**	-				
14	.42**	.31*	.42**	.40**	.40**	.23	.17	.08	-.39**	-.45**	.68**	.61**	.55**	-			
15	.38**	.32*	.41**	.45**	.45**	.41**	.33*	.22	-.48**	-.48**	.92**	.77**	.78**	.79**	-		
16	.13	.03	.28	.47**	.47**	.16	.48**	.15	-.55**	-.52*	.33	.30*	.35*	.32*	.39**	-	

Note

** Correlation is significant at the 0.01 level (2-tailed).¹ Physical functioning, ² Role limitations due to physical health, ³ Role limitations due to emotional health, ⁴ Vitality, ⁵ Emotional wellbeing, ⁶ Social functioning, ⁷ General health, ⁸ Pain, ⁹ Depressive symptoms, ¹⁰ Loneliness, ¹¹ Consensus ¹² Affectional expression, ¹³ Satisfaction, ¹⁴ Cohesion, ¹⁵ Marital satisfaction general score, ¹⁶ Self-esteem



Results indicated that in the second trimester of pregnancy, the physical functioning component of the health-related quality of life presented no significant association patterns with the assessed variables, while after giving birth, this variable became strongly associated with the affectional expression ($r(43) = .27, p < .01$) and cohesion ($r(43) = .42, p < .01$) components of the marital satisfaction scale. Role limitations due to physical health presented a weak negative correlation with depressive symptoms in the second trimester before giving birth ($r(40) = -.36, p < .05$), while one month after giving birth it positively correlated with marital satisfaction ($r(42) = .32, p < .05$) and cohesion ($r(42) = .31, p < .01$).

Role limitations due to emotional problems before birth negatively correlate with loneliness ($r(38) = -.32, p < .05$), and positively with marital consensus ($r(29) = .47, p < .01$), affectional expression ($r(39) = .44, p < .01$), marital satisfaction ($r(38) = .40, p < .05$), and cohesion ($r(38) = .33, p < .05$), while one month after giving birth we found significant negative correlations with depression ($r(40) = -.47, p < .01$), loneliness ($r(40) = -.40, p < .01$), marital satisfaction ($r(40) = .48, p < .01$), cohesion ($r(40) = .42, p < .01$). The vitality subscale of the SF-36 presents a significant negative association pattern with depressive symptoms before giving birth ($r(41) = -.62, p < .01$), loneliness ($r(41) = -.41, p < .01$), positive association with self-esteem ($r(42) = .40, p < .01$), marital satisfaction ($r(42) = .35, p < .05$) and cohesion ($r(42) = .38, p < .05$), while one month after giving birth vitality presents a significant negative association with depressive symptoms ($r(43) = -.86, p < .01$), loneliness ($r(43) = -.71, p < .01$), positive association with consensus ($r(43) = .39, p < .01$), marital satisfaction ($r(43) = .41, p < .01$), and self-esteem ($r(43) = .47, p < .01$). Our results indicate that emotional well-being in the second trimester of pregnancy is negatively associated with depression ($r(41) = -.65, p < .01$), loneliness ($r(41) = -.59, p < .01$), and positively with self-esteem ($r(43) = .56, p < .01$), marital consensus ($r(32) = .69, p < .01$), marital satisfaction ($r(42) = .71, p < .01$), and cohesion ($r(42) = .66, p < .01$). One month after giving birth, emotional well-being presented significant negative correlation with depression ($r(43) = -.86, p < .01$), loneliness ($r(43) = -.71, p < .01$), and positively with self-esteem ($r(43) = .47, p < .01$), consensus ($r(43) = .39, p < .01$), marital satisfaction ($r(43) = .41, p < .01$), and cohesion ($r(43) = .40, p < .01$). The social functioning component of the subjective well-being scale presents a single significant association pattern, during pregnancy, namely negative correlation with depression ($r(41) = -.51, p < .01$). The general health subscale of the SF-36 reported a significant negative correlations with depressive symptoms ($r(44) = -.40, p < .01$), loneliness ($r(42) = -.43, p < .01$), and positive associations with marital satisfaction ($r(42) =$



.37, $p < .05$) and cohesion ($r(42) = .36$, $p < .05$) during pregnancy. One month after giving birth, general health negatively correlates with loneliness ($r(43) = -.51$, $p < .01$), positively with marital consensus ($r(43) = .32$, $p < .05$), and marital satisfaction ($r(43) = .34$, $p < .05$). Finally, pain presents no significant correlations with any of the assessed variables in the second trimester of pregnancy, while one month after giving birth it is weakly associated only with marital satisfaction ($r(43) = .31$, $p < .05$).

Table 5.
Comparison of significant correlation coefficients

Subscales of SF-36	Correlates T1	Correlates T2	Z	p
Physical functioning	NONE	Consensus=.46** Cohesion=.42**		
Role limitations due to physical functioning	BDI=-.36**	Marital satisfaction=.32** Cohesion=.31*		
Role limitations due to emotional functioning	UCLA=-.32**	BDI=-.47** UCLA=-40**	-0.59	NS
	Affectional expression =.43**			
	Satisfaction=.40**	Satisfaction=.48**	-0.47	NS
Vitality	Cohesion =.38** BDI=-.62** UCLA=-.41** Self-esteem=.40**	Cohesion=.42** BDI=-.86** UCLA=-.71** Self-esteem=.47**	-0.22 -2.57 -2.04 -0.39	NS .01 .05 NS
Emotional well-being	Satisfaction=.35* Cohesion=.38** BDI=-.65** UCLA=-.59** Self-esteem=.54** Consensus=.69** Satisfaction=.71** Cohesion=.66**	Satisfaction=.41** Cohesion=.40** BDI=-.86** UCLA=-.71** Self-esteem=.47** Consensus=.39** Satisfaction=.41** Cohesion=.40**	-0.32 -0.11 -2.35 -0.95 0.42 1.97 2.04 1.67	NS NS .01 NS NS .05 .05 NS
Social functioning	BDI=-.51**	BDI=-.29* Consensus=.41** Satisfaction=.35*	1.19	NS
General health	BDI=-.40** UCLA=-.43** Self-esteem=.43 Satisfaction=.37** Cohesion=.36*	BDI=-.62** UCLA=-.51** Self-esteem=.48** Satisfaction=.34*	-1.36 -0.47 -0.29 0.15	NS NS NS NS
Pain	BDI=-.37**	Consensus=.32* Satisfaction=.31*		

Based on the results, in Table 5 are presented the major significant correlates of health-related quality of life as assessed during the second semester of pregnancy and one month after giving



birth, as well as the result of the comparison of the correlation coefficients (Z) (based on Steiger, 1980).

As the results indicated, within the sample there existed some similarities in the correlation patterns during pregnancy (T_1) and after giving birth (T_2) (as seen in Table 5). However, it was found significant differences between the strength of some of these associations. Thus, even if both at T_1 and T_2 vitality significantly correlates with depressive symptoms, this association is significantly stronger at T_2 than at T_1 ($Z = -2.57, p < .01$). The same pattern may be found in the case of loneliness, where associations with vitality are significantly stronger at T_2 than at T_1 ($Z = -2.04, p < .05$). Further on, emotional well-being is significantly correlated with depression both at T_1 and T_2 , but the association is significantly stronger at T_2 than at T_1 ($Z = -2.31, p < .01$). Emotional well-being is also significantly correlated with two of the components of the marital satisfaction scale, and in both cases the correlation is significantly stronger at T_1 than at T_2 : consensus ($Z = 1.97, p < .05$) and satisfaction ($Z = 2.04, p < .05$).

Discussion

The first objective of the current study was to investigate whether there were significant differences in health-related quality of life and indicators of mental health in women during pregnancy and after giving birth. The results indicated that depressive symptoms significantly increased from pre- to postnatal assessments, results that are in line with previous findings. Studies indicate that approximately 10% of women develop postpartum depression in the first weeks after giving birth (Cooper & Murray, 1998) and 15 to 85% have postpartum blues, which include mood swings, irritability, sadness, fatigue (Pearlstein et al., 2009). Another study discovered that the percentage of women with clinical depression after birth was slightly higher (10.4%), than before pregnancy (8.7%) and during pregnancy (6.9%) (Dietz et al., 2007).

Other significant differences between the two assessments were observed in what concerns the quality of life variables (SF-36). More specifically, physical functioning and vitality were the aspects of quality of life which improved after giving birth. One possible explanation for this improvement is that during pregnancy most women go through symptoms of nausea and vomiting, which affect the quality of life of the pregnant woman (Lacasse et al., 2008). These findings are also supported by the fact that during pregnancy the metabolism goes through a lot



of changes, the urinary system is affected, along with the respiratory system and the genital organs (Calou et al., 2018). Emotional well-being recorded significant decreases from prenatal to postnatal evaluation. One important aspect related to emotional well-being is the social support that the pregnant woman receives, therefore if she feels supported by her partner, family or friends, it is more likely that she will feel better emotionally (McLeish & Redshaw, 2017). Regarding social support, our study indicates that pregnant women also felt more cohesive with their partner and family during pregnancy than after they gave birth. Social cohesion seems to work like a buffer between poor social support and psychological distress (Yamada et al., 2021).

Cohesion along with affectionate expression are marital satisfaction variables. While cohesion decreased after giving birth, affectionate expression increased after birth. Regarding affectionate expression, women were more prone to express affection after they gave birth and they also felt more satisfied with their marriage after having their baby. These results are confirmed by other studies, suggesting that the dynamics of the new parents have a big impact over marital satisfaction. If the partner was sensitive and paid attention to the mother, to the baby and the relationship, and also if the woman felt being present in their relationship, then marital satisfaction increased or remained stable (Shapiro et al., 2000).

Also, women had better social functioning during pregnancy than after birth. This may be, in part, because after giving birth, the new mothers do not have the time and energy to engage in social activities (Haas et al., 2005). Although compared to nonpregnant women, in pregnancy there are observed declines in social functioning (Otchet et al., 1999), but the severity of the decline is influenced by more factors, such as the household income, marital status, the number of times the woman gave birth, multiparity being related to a lower social functioning, as well as pregnancy complications and pregnancy anxiety (Da Costa et al., 2010).

The second objective was to investigate the association patterns between these variables during pregnancy and after giving birth. During pregnancy, we can observe a positive association between vitality and self-esteem and between vitality and marital satisfaction. As the level of vitality increases, so does the level of self-esteem and marital satisfaction. On the other hand, we identified a negative association between vitality and depression and loneliness. As the level of vitality decreases, the symptoms of depression and loneliness increase. Studies show that maintaining physical activities during pregnancy, even in a lesser degree, contributes

to physical well-being and a sense of enjoyment (Hegaard et al., 2010). The emotional well-being was negatively associated with depressive symptoms and with loneliness. Also, emotional well-being was positively associated with self-esteem and marital satisfaction. Emotional well-being is stronger associated with marital consensus and satisfaction during pregnancy than after giving birth. Based on a study published in 2006, emotional well-being seemed to improve during pregnancy for women who went through positive changes regarding their self-efficacy for labor and delivery (Sieber et al., 2006).

Role limitations due to emotional problems were negatively associated with loneliness and positively associated with marital consensus, affectionate expression, marital satisfaction, and cohesion. As role limitations due to emotional problems decreased, marital satisfaction overall increased. When talking about role limitations due to physical health, they were negatively associated with depressive symptoms. Physical symptoms present during pregnancy, such as nausea and vomiting, along with sleep problems might limit women's activities, affecting their health status, including emotional health (Da Costa et al., 2010). Social functioning was identified to be negatively associated with depressive symptoms. Nonetheless, the general health of the pregnant woman was negatively associated with depressive symptoms and the feelings of loneliness and positively associated with marital satisfaction and cohesion.

After giving birth, vitality was negatively associated with depressive symptoms and feelings of loneliness and positively associated with self-esteem, consensus, and marital satisfaction. As shown in the literature, vitality levels declined during pregnancy and remain at similar levels after giving birth (Nicholson et al., 2006). Based on this research results this association, even though is present during pregnancy too, it is stronger after giving birth. It may be because women usually feel more tired after giving birth than during pregnancy (Henderson et al., 2019). Also, emotional well-being was negatively associated with depressive symptoms and loneliness and positively associated with self-esteem, marital consensus, satisfaction, and cohesion. In the present study, the association between emotional well-being and depressive symptoms seemed to be stronger after giving birth than during pregnancy. In what concerns role limitations due to emotional problems, they were negatively associated with depressive symptoms, feelings of loneliness, marital satisfaction, and cohesion.

In what concerns the general health after pregnancy, it was negatively associated with loneliness and positively associated with marital satisfaction and consensus. Physical

functioning was positively associated with affectionate expression and cohesion. Also, role limitations due to physical health were positively associated with marital satisfaction and cohesion. Studies show that physical functioning is at its best after conception, then it declines, but it improves after giving birth (Haas et al., 2005). There are certain factors that may affect the health status of the women after giving birth, such as poor social support, lack of exercise during pregnancy, pregnancy factors (Caesarian section), financial problems (Haas et al., 2005).

Limitations and further implications

The study has certain limitations. The questionnaires were completed using a self-report method and the data might not be reliable. Another limitation is the small sample size and the fact that we included only women who had internet access to complete the questionnaires online. More measurements are needed to precisely examine changes in health-related quality of life before and after giving birth. Future studies are needed to test our results in a bigger and more diverse sample of pregnant women. Furthermore, a qualitative research design can be approached to explore the health-related quality of life pregnant women and gain a better understanding of the subject. The results of our study can be used as a basis for designing, planning, and implementing appropriate interventions to enhance the health-related quality of life of women by healthcare providers and policymakers. By providing these services, the physical and emotional health of the mother and the baby can be influenced positively.

Conclusions

Some of the findings of the study highlight the fact that in the postnatal period, the participants reported a higher level of depressive symptoms, a decrease in the emotional well-being and social functioning, while during pregnancy, the participants reported a higher level of physical functioning and vitality. Moreover, women in the sample reported a decrease in the level of cohesion after birth but an increase in the affectionate expression.

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Competing Interests

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References

- Adewuya, A. O., Ola, B. A., Aloba, O. O., Dada, A. O., & Fasoto, O. O. (2007). Prevalence and correlates of depression in late pregnancy among Nigerian women. *Depression and Anxiety, 24*(1), 15–21. <https://doi.org/10.1002/da.20221>
- Băban, A., Schwarzer, R., & Jerusalem, M. (1996). Romanian version of the General SelfEfficacy Scale. Document available at <http://userpage.fu-berlin.de/health>.
- Baldoni, F., Giannotti, M., Casu, G., Luperini, V., & Spelzini, F. (2020). A Dyadic Study on Perceived Stress and Couple Adjustment During Pregnancy: The Mediating Role of Depressive Symptoms. *Journal of Family Issues, 41*(11), 1935–1955. <https://doi.org/10.1177/0192513X20934834>
- Beck, A. T. (Ed.). (1979). *Cognitive therapy of depression*. Guilford press.
- Calou, C. G. P., de Oliveira, M. F., Carvalho, F. H. C., Soares, P. R. A. L., Bezerra, R. A., de Lima, S. K. M., Antezana, F. J., de Souza Aquino, P., Castro, R. C. M. B., & Pinheiro, A. K. B. (2018). Maternal predictors related to quality of life in pregnant women in the Northeast of Brazil. *Health and Quality of Life Outcomes, 16*(1), 109. <https://doi.org/10.1186/s12955-018-0917-8>
- Carlander, A. K. K., Andolf, E., Edman, G., & Wiklund, I. (2015). Health-related quality of life five years after birth of the first child. *Sexual and Reproductive Healthcare, 6*(2), 101–107. <https://doi.org/10.1016/j.srhc.2015.01.005>
- Cooper, P. j., & Murray, L. (1998). Postnatal depression. *BMJ, 316*(7148), 1884. <https://doi.org/10.1136/bmj.316.7148.1884>



- Couto, E. R., Couto, E., Vian, B., Gregório, Z., Nomura, M. L., Zaccaria, R., & Passini, R. (2009). Quality of life, depression and anxiety among pregnant women with previous adverse pregnancy outcomes. *Sao Paulo Medical Journal*, *127*(4), 185–189. <https://doi.org/10.1590/S1516-31802009000400002>
- Da Costa, D., Dritsa, M., Verreault, N., Balaa, C., Kudzman, J., & Khalifé, S. (2010). Sleep problems and depressed mood negatively impact health-related quality of life during pregnancy. *Archives of Women's Mental Health*, *13*(3), 249–257. <https://doi.org/10.1007/s00737-009-0104-3>
- David, D., & Dobrean, A. (2012). Beck Depression Inventory. A Romanian adaptation. Retrieved from www.rtscluj.ro.
- Dietz, P. M., Selvi Williams, M. B., William Callaghan, M. M., Donald Bachman, M. J., Evelyn Whitlock, M. P., & Mark Hornbrook, M. C. (2007). Clinically Identified Maternal Depression Before, During, and After Pregnancies Ending in Live Births. In *Am J Psychiatry* (Vol. 164). <https://doi.org/10.1176/APPI.AJP.2007.06111893/ASSET/IMAGES/LARGE/S315T2.JPEG>
- Eke, O., & Onyenyirionwu, U. (2019). Psycho-Social Predictors of Peripartum Depression among Nigerian Women. *Journal of Women's Health and Development*, *02*(02). <https://doi.org/10.26502/fjwhd.2644-2884008>
- Furber, C. M., Garrod, D., Maloney, E., Lovell, K., & McGowan, L. (2009). A qualitative study of mild to moderate psychological distress during pregnancy. *International Journal of Nursing Studies*, *46*(5), 669–677. <https://doi.org/10.1016/j.ijnurstu.2008.12.003>
- Gandek, B., Sinclair, S. J., Kosinski, M., & Ware, J. E., Jr. (2004). Psychometric evaluation of the SF-36 health survey in Medicare managed care. *Health Care Financing Review*, *25*, 5–25.
- Haas, J. S., Jackson, R. A., Fuentes-Afflick, E., Stewart, A. L., Dean, M. L., Brawarsky, P., & Escobar, G. J. (2005). Changes in the health status of women during and after pregnancy. *Journal of General Internal Medicine*, *20*(1), 45–51. <https://doi.org/10.1111/j.1525-1497.2004.40097.x>
- Hama, K., Takamura, N., Honda, S., Abe, Y., Yagura, C., Miyamura, T., Obama, M., Morisaki, M., Imamura, S., & Aoyagi, K. (2008). Evaluation of Quality of Life in Japanese Normal Pregnant Women. *Acta Medica Nagasakiensia*, *52*(4), 95–99. <https://doi.org/10.11343/AMN.52.95>



- Hegaard, H. K., Kjaergaard, H., Damm, P. P., Petersson, K., & Dykes, A. K. (2010). Experiences of physical activity during pregnancy in Danish nulliparous women with a physically active life before pregnancy. A qualitative study. *BMC Pregnancy and Childbirth*, *10*(1), 33. <https://doi.org/10.1186/1471-2393-10-33>
- Henderson, J., Alderdice, F., & Redshaw, M. (2019). Factors associated with maternal postpartum fatigue: An observational study. *BMJ Open*, *9*(7), 25927. <https://doi.org/10.1136/bmjopen-2018-025927>
- Howard, L. M., Piot, P., & Stein, A. (2014). No health without perinatal mental health. In *The Lancet* (Vol. 384, Issue 9956, pp. 1723–1724). Lancet Publishing Group. [https://doi.org/10.1016/S0140-6736\(14\)62040-7](https://doi.org/10.1016/S0140-6736(14)62040-7)
- Huble, A. M. (2014). Beck Depression Inventory-II (BDI-II). In A. C. Michalos (Ed.), *Encyclopedia of Quality of Life Research* (pp. 338-345). Dordrecht, Netherlands: Springer. https://doi.org/10.1007/978-94-007-0753-5_156
- Huizink, A. C., Delforterie, M. J., Scheinin, N. M., Tolvanen, M., Karlsson, L., & Karlsson, H. (2016). Adaption of pregnancy anxiety questionnaire—revised for all pregnant women regardless of parity: PRAQ-R2. *Archives of Women's Mental Health*, *19*(1), 125–132. <https://doi.org/10.1007/s00737-015-0531-2>
- John, J., & Manriquez, M. (2018). *Self-Esteem in Primigravida Women Item* <http://hdl.handle.net/10150/627172>
- Kazemi, F., Nahidi, F., & Kariman, N. (2017). Exploring factors behind pregnant women's quality of life in Iran: a qualitative study. *Electronic Physician*, *9*(12), 5991–6001. <https://doi.org/10.19082/5991>
- Lacasse, A., Rey, E., Ferreira, E., Morin, C., & Bérard, A. (2008). Nausea and vomiting of pregnancy: what about quality of life? *BJOG: An International Journal of Obstetrics & Gynaecology*, *115*(12), 1484–1493. <https://doi.org/10.1111/j.1471-0528.2008.01891.x>
- Lagadec, N., Steinecker, M., Kapassi, A., Magnier, A. M., Chastang, J., Robert, S., Gaouaou, N., & Ibanez, G. (2018). Factors influencing the quality of life of pregnant women: a systematic review. *BMC Pregnancy and Childbirth*, *18*(1), 455. <https://doi.org/10.1186/s12884-018-2087-4>



- Liu, L., Setse, R., Grogan, R., Powe, N. R., & Nicholson, W. K. (2013). The effect of depression symptoms and social support on black-white differences in health-related quality of life in early pregnancy: the health status in pregnancy (HIP) study. *BMC Pregnancy and Childbirth*, *13*(1), 125. <https://doi.org/10.1186/1471-2393-13-125>
- Lou, S., Frumer, M., Schlütter, M. M., Petersen, O. B., Vogel, I., & Nielsen, C. P. (2017). Experiences and expectations in the first trimester of pregnancy: a qualitative study. *Health Expectations*, *20*(6), 1320–1329. <https://doi.org/10.1111/hex.12572>
- Lucas, G., Olander, E. K., Ayers, S., & Salmon, D. (2019). No straight lines – young women’s perceptions of their mental health and wellbeing during and after pregnancy: a systematic review and meta-ethnography. *Undefined*, *19*(1). <https://doi.org/10.1186/S12905-019-0848-5>
- Mandai, M., Kaso, M., Takahashi, Y., & Nakayama, T. (2018). Loneliness among mothers raising children under the age of 3 years and predictors with special reference to the use of SNS: A community-based cross-sectional study. *BMC Women’s Health*, *18*(1). <https://doi.org/10.1186/s12905-018-0625-x>
- Martínez-Galiano, J. M., Hernández-Martínez, A., Rodríguez-Almagro, J., & Delgado-Rodríguez M. (2019). Quality of life of women after giving birth: Associated factors related with the birth process. *Journal of Clinical Medicine*, *8*(3), 324. <https://doi.org/10.3390/jcm8030324>.
- McLeish, J., & Redshaw, M. (2017). Mothers’ accounts of the impact on emotional wellbeing of organised peer support in pregnancy and early parenthood: a qualitative study. *BMC Pregnancy and Childbirth*, *17*(1), 28. <https://doi.org/10.1186/s12884-017-1220-0>
- Morin, M., Vayssiere, C., Claris, O., Irague, F., Mallah, S., Molinier, L., & Matillon, Y. (2017). Evaluation of the quality of life of pregnant women from 2005 to 2015. *European Journal of Obstetrics and Gynecology and Reproductive Biology*, *214*, 115–130. <https://doi.org/10.1016/J.EJOGRB.2017.04.045>
- Nicholson, W. K., Setse, R., Hill-Briggs, F., Cooper, L. A., Strobino, D., & Powe, N. R. (2006). Depressive Symptoms and Health-Related Quality of Life in Early Pregnancy. *Obstetrics & Gynecology*, *107*(4), 798–806. <https://doi.org/10.1097/01.AOG.0000204190.96352.05>
- Otchet, F., Carey, M. S., & Adam, L. (1999). General health and psychological symptom status in pregnancy and the puerperium: What is normal? *Obstetrics and Gynecology*, *94*(6), 935–941. [https://doi.org/10.1016/S0029-7844\(99\)00439-1](https://doi.org/10.1016/S0029-7844(99)00439-1)



- Pearlstein, T., Howard, M., Salisbury, A., & Zlotnick, C. (2009). Postpartum depression. In *American Journal of Obstetrics and Gynecology* (Vol. 200, Issue 4, pp. 357–364). NIH Public Access. <https://doi.org/10.1016/j.ajog.2008.11.033>
- Rokach, A. M. I. (2007). Self-perception of the antecedents of loneliness among new mothers and pregnant women. *Psychological Reports, 100*(1), 231–243. <https://doi.org/10.2466/PRO.100.1.231-243>
- Røsand, G. M. B., Slinning, K., Eberhard-Gran, M., Røysamb, E., & Tambs, K. (2011). Partner relationship satisfaction and maternal emotional distress in early pregnancy. *BMC Public Health, 11*(1), 1–12. <https://doi.org/10.1186/1471-2458-11-161>
- Rosenberg, M. (1965). Society and the Adolescent Self-Image. *Social Forces, 44*(2), 255. <https://doi.org/10.2307/2575639>
- Rosenthal, R. (1994). Parametric measures of effect size. In H. Cooper & L. V. Hedges (Eds.), *The handbook of research synthesis*. (pp. 231-244). New York: Russell Sage Foundation.
- Russell, D., Peplau, L. A., & Cutrona, C. E. (1980). The revised UCLA Loneliness Scale: Concurrent and discriminant validity evidence. *Journal of Personality and Social Psychology, 39*(3), 472–480. <https://doi.org/10.1037//0022-3514.39.3.472>
- Santos, P. C., Ferreira, M. I., Teixeira, R. J., Couto, M. F., Montenegro, N., & Mota, J. (2016). *Physical Activity and Self-Esteem during Pregnancy*.
- Satyanarayana, V. A., Lukose, A., & Srinivasan, K. (2011). Maternal mental health in pregnancy and child behavior. *Indian Journal of Psychiatry, 53*(4), 351–361. <https://doi.org/10.4103/0019-5545.91911>
- Shapiro, A. F., Gottman, J. M., & Carrère, S. (2000). The baby and the marriage: Identifying factors that buffer against decline in marital satisfaction after the first baby arrives. *Journal of Family Psychology, 14*(1), 59–70. <https://doi.org/10.1037/0893-3200.14.1.59>
- Sieber, S., Germann, N., Barbir, A., & Ehlert, U. (2006). Emotional well-being and predictors of birth-anxiety, self-efficacy, and psychosocial adaptation in healthy pregnant women. *Acta Obstetrica et Gynecologica Scandinavica, 85*(10), 1200–1207. <https://doi.org/10.1080/00016340600839742>
- Spanier, G. B. (1976). Measuring Dyadic Adjustment: New Scales for Assessing the Quality of Marriage and Similar Dyads. *Journal of Marriage and the Family, 38*(1), 15. <https://doi.org/10.2307/350547>



- Steiger, J. H. (1980). Tests for comparing elements of a correlation matrix. *Psychological Bulletin*, *87*, 245–251.
- Ware, J. E., Brook, R. H., Davies, A. R., Williams, K. N., Stewart, A., Rogers, W. H., Donald, C. A., & Johnston, S. A. (1980). *Conceptualization and Measurement of Health for Adults in the Health Insurance Study: Vol. I, Model of Health and Methodology*.
<https://www.rand.org/pubs/reports/R1987z1.html>
- Weis, J. R., & Renshon, D. (2019). Steps towards a comprehensive approach to maternal and child mental health. In *The Lancet Public Health* (Vol. 4, Issue 6, pp. e268–e269). Elsevier Ltd.
[https://doi.org/10.1016/S2468-2667\(19\)30087-8](https://doi.org/10.1016/S2468-2667(19)30087-8)
- Yamada, K., Kimura, T., Cui, M., Kubota, Y., Ikehara, S., & Iso, H. (2021). Social support, social cohesion and pain during pregnancy: The Japan Environment and Children's Study. *European Journal of Pain*, *25*(4), 872–885. <https://doi.org/10.1002/ejp.1717>
- Zietlow, A.-L., Nonnenmacher, N., Reck, C., Ditzen, B., & Müller, M. (2019). Emotional Stress During Pregnancy – Associations With Maternal Anxiety Disorders, Infant Cortisol Reactivity, and Mother–Child Interaction at Pre-school Age. *Frontiers in Psychology*, *10*(SEP), 2179.
<https://doi.org/10.3389/fpsyg.2019.02179>

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