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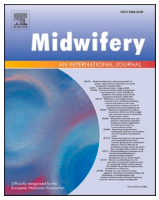

Quality of life and social support during pregnancy in Spanish population. A longitudinal study

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ABSTRACT

Background: The quality of life and social support during pregnancy are two variables influencing the health of pregnants and neonates. The documented impact of these variables on mental health, specifically the risk of depression, is notable.
Aim: To investigate the evolution of quality of life and social support at the beginning and end of pregnancy in pregnant women, and to examine the relationship between these variables.
Methods: The proposed longitudinal study includes 188 pregnants from a northern region of Spain. Participants were selected through consecutive sampling from September 2021 to April 2023. Quality of life and social support will be assessed in the first and third trimesters of pregnancy using the SF-36 questionnaire and MOS-SSS questionnaire, respectively.
Findings: The questionnaires show strong internal consistency ($\alpha = 0.91$ and 0.97). Quality of life changes during pregnancy, declining in the physical component and rising in the mental component towards the end. Primiparous women have higher quality of life. Depression risk is 29.8 % in the 1st trimester, dropping to 22.9 % in the 3rd trimester. Social support decreases in the 3rd trimester, particularly among unmarried women. Significant positive correlations exist between quality of life and social support.
Conclusion: This study emphasizes notable variations in quality of life and social support during pregnancy, impacting the health of pregnant individuals and neonates. Proposing standardization in monitoring these factors during prenatal check-ups aims to improve the physical and mental health of pregnant individuals and newborns.

Statement of significance

Problem or issue

A comprehensive analysis of quality of life and social support during pregnancy has important implications for the health of both pregnant women and their newborns.

What is already known

Quality of life and social support undergo discernible modifications throughout the gestational period, with both variables serving as influential factors in maternal and neonatal health.

What this paper adds

Quality of life decline during the third trimester, particularly in the physical component, while showing an increase in the mental component. This shift is associated with a reduction in the risk of

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depression. Additionally, a positive correlation between social support and quality of life is observed.

Introduction

Pregnancy represents a period of numerous physical and mental changes that can impact the quality of life (QoL) for women and the maternal and neonatal health (Ibanez et al., 2015). Social support during pregnancy is an important variable influencing maternal-fetal health (Hee Jeong et al., 2023).

QoL is a concept defined by the World Health Organization (WHO) as "an individual's perception of his or her position in life within the cultural context and value system in which he or she lives and for his or her goals, expectations, norms and concerns" (The World Health Organization quality of life assessment (WHOQOL), 1995). Since then, it has become an important concept for community health, to the point of being one of the most important health indicators and being included in the Sustainable Development Goals (ODS), specifically in the third goal "health and well-being" (Casarin et al., 2010). QoL is influenced by factors inherent to the human being and external agents that include physical health, mental health, level of dependency, social relations, and relationship with the environment. Therefore, the approach must be multidimensional and not isolated (Vilagut et al., 2005).

Social support is defined as the provision of emotional (e.g. caring), or informational (e.g. notifying someone of important information) support, instrumental (e.g. helping with housekeeping), tangible (e.g. practical support like financial aid), and/or psychological support for somebody by the social network of family members, friends, and community members (Cohen et al., 2004). Social support is believed to enhance positive interactions among individuals, contributing to the alleviation of depression, stress, and anxiety. Consequently, this is anticipated to lower the likelihood of adverse outcomes during pregnancy and childbirth (Cohen and Wills, 1985).

Studies show a relationship between levels of social support and health outcomes (Muñoz-Bermejo et al., n.d.), with this link being particularly strong for women (Szkody and McKinney, 2020). In the case of pregnant women, social support is specifically related to mental health, such that pregnant women are at an increased risk of developing stress, anxiety or depression (Rodríguez-Leis and Flores-Gallegos, 2018). The prevalence of anxiety during pregnancy ranges from 14 % to 59 % (García Fernández et al., 2022; Hernández-Martínez et al., 2011). Depression, on the other hand, constitutes the most prevalent mental health issue during pregnancy. According to the consulted studies, its prevalence ranges from 15 % to 65 % (Dadi et al., 2020). Numerous articles in european, asian, and american populations conclude that QoL undergoes changes throughout pregnancy due to various physical, social, and emotional factors (De Pascalis et al., 2012; Vinturache et al., 2015). Anxiety and/or depression during pregnancy adversely impact the QoL for expectant mothers. This not only leads to an increase in substance consumption but also results in numerous negative repercussions on the health of both the mother and the newborn. In addition, pregnant women may experience various levels of psychological problems, such as mood swings, fatigue, emotional disturbances, mixed anxiety and depression disorder, and pregnancy-related anxiety due to their concern about the growing fetus and their future responsibilities (Shapiro et al., 2013; Straub et al., 2014). Several authors have linked low social support to a diminished QoL as well as an increased risk of anxiety and/or depression (Biaggi et al., 2016; Ogbo et al., 2018). Furthermore, various international studies, including those in European populations, have demonstrated a negative association between social support and the risk of anxiety and/or depression (Bedaso et al., 2021; Taylor et al., 2022). There are limited studies in our country that analyse QoL during pregnancy, and few have explored the influence of social support on quality of life throughout pregnancy.

The perception of social support by the pregnant woman can reduce prenatal stress and adverse psychological conditions during pregnancy, which in turn contributes to improving her QoL and reducing the risk of postnatal affective symptoms (Romero-Gonzalez et al., 2021).A recently conducted meta-analysis not only reaffirms these statements but also concludes that strong social support during pregnancy is associated with an improved QoL (Lagadec et al., 2018).

The main objective of this research is to find out how QoL and social support evolve at the beginning and end of pregnancy in pregnant women in northern Spain. As secondary objectives, the aim is to examine the relationship between social support and QoL during pregnancy and to analyse the impact of socio-demographic and gynaecobstetric variables on QoL and social support during pregnancy.

Participants, ethics and methods

Design

A prospective longitudinal study is proposed through the completion of an online questionnaire in the first and third trimesters of pregnancy. The data were collected from September 2021 to April 2023.

Sample

The sample size was calculated for correlation bivariate model, one tail, with an alpha of 0.05 and a power (1-beta) of 0.95 waiting for a correlation > 0.25 (H1). The required sample size was 168 subjects. For the sample size calculation, the G-Power 3.1.9.7 program was used. This sample size ensures that the study has a high probability of detecting significant differences if they exist. Finally, the sample consisted of 188 women who were selected through consecutive sampling. During the year 2022, a total of 484 births occurred in the hospital of the study region.

Procedure

Women were recruited during their first prenatal visit at the hospital where the study was conducted, which they attended voluntarily. In the study area, pregnant women request this first consultation after learning about their pregnancy and go to the hospital between weeks 6 and 9 of gestation. During this initial consultation, they were informed about the study and invited to participate voluntarily. An online software tool was used to complete the survey. Women answered the questions at two points during their pregnancy: in the first trimester, between weeks 9 and 11 of gestation, and in the third trimester, between weeks 35 and 37 of gestation.

Inclusion criteria were established as pregnant women who are of legal age. Women with a personal history of anxiety, depression, or psychiatric illness; language barriers; difficulties in completing the survey either due to lack of knowledge or lack of technological resources; and those who did not consent or refused to participate in the study were excluded. Ultimately, 188 participants met the inclusion criteria and completed all the surveys in the 1st and 3rd trimester.

Informed consent was secured from all participants after proper assurances were provided regarding the voluntary nature of the survey, anonymity, confidentiality, and data protection. Additionally, participants were provided with a contact email address in case they had any questions or needed further clarification on any aspect of the study.

All the subjects voluntarily signed the informed consent form, which was prepared following the Declaration of Helsinki and the European Union's Good Clinical Practice Directive (Directive 2005/28/EC). The study has been approved by the ethics committees of the two health areas involved in the study (reference code xxxxx) as well as by the ethics committee of a public university (ETICA-xxx-xxx-xxxx).

Instruments

The questionnaire consists of two parts. The first part includes socio-demographic data (age, marital status, nationality or area of residence) and obstetric-gynecological information (date of last menstrual period, gestational formula, obstetric history, type of breastfeeding and method of conception: natural or assisted). The second part analyses the variables quality of life and social support using validated questionnaires.

36-Item Short-Form health survey (SF-36v2)

The 36-Item Short-Form Health Survey (SF-36v2) was utilized to evaluate health-related quality of life, created in 1993 by Are and later validated for Spanish population (Vilagut et al., 2005). This tool is intended to assess an individual's perception of their health status and encompasses 36 items, spanning 8 distinct dimensions (physical functioning, role physical, bodily pain, general health, vitality, social functioning, role emotional, and mental health). Additionally, this survey includes a health transition item offering insights into the individual's health over the past year. Besides the 8 dimensions above, two main health components can be extracted: physical component summary (PCS) and mental component summary (MCS). The scoring for these dimensions is on a scale from 0 to 100. The higher the score, the better the state of health. Scores above 50 suggesting a health status superior to the reference population average (Ware et al., 1993; Ware and Sherbourne, 1992). Vilagut found in 2005 that 96 % of the analyzed scales surpassed the recommended reliability standard (Cronbach's α) of 0.7 (Vilagut et al., 2005). The validation of this instrument in the Spanish population yielded Cronbach's alpha values of 0.45 in the social functioning dimension; in the other dimensions, the values were above 0.71 (Alonso et al., 1995). A systematic review on the analysis of QoL during pregnancy conducted between 2011 and 2021 concluded that the most commonly used questionnaire for assessing the QoL in pregnant women was the SF-36 (Boutib et al., 2022).

Medical outcomes stud-social support survey MOS-SSS

The social support variable was assessed through the Medical Outcomes Stud-Social Support Survey MOS-SSS (Arredondo et al., 2012; Sherbourne and Stewart, 1991). It was validated in Spain for the general population in 2005 (Revilla et al., 2005) and for cancer patients in 2007 (Costa-Requena et al., 2007) . This self-administered questionnaire evaluates the following items: social support network, social emotional/informational support, instrumental support, positive social interaction, and affective support. These authors established minimum, average and maximum values; the average value was set at 24 points for "emotional support", 12 for "tangible support", 12 for "positive social interaction", 9 for "affective support" and 57 for the "total score". The Spanish validation of the MOS-SSS scale showed a reliability of 0.94. Cronbach's alpha values were 0.92 for emotional/informational social support, 0.79 for instrumental support, 0.83 for positive social interaction, and 0.74 for affective support. A recent systematic review and meta-analysis conducted by Bedaso et al. in 2021 examined social support and pregnancy. The study analyzed various instruments used to measure self-perceived social support during pregnancy. Among all the instruments reviewed, the MOS-SSS (Medical Outcomes Study-Social Support Survey) achieved the highest Cronbach's alpha score, with an average of 0.953 (Bedaso et al., 2021).

Statistical analysis

The data were processed using SPSS Statistics v28.0 software (IBM, Armonk, NY, USA). A descriptive evaluation was conducted on the sample participants (frequencies and percentages), and the perception levels of QoL and social support were analyzed across all dimensions and total score. The Kolmogorov-Smirnov test with Lilliefors correction was used to test the distributions of the numerical variables, revealing the absence of normality in all the variables under study. Subsequently, the differences between QoL and social support and the study variables were analyzed using non-parametric tests. On one hand, to compare QoL and social support in the 1st and 3rd trimesters based on parity and other qualitative variables, the Mann-Whitney U test was used; on the other hand, the Kruskal-Wallis test was used in cases where the qualitative variable had more than 2 categories. The Wilcoxon signed-rank test was used to analyze the differences in quality of life between the 1st and 3rd trimesters of pregnancy. To compare the percentage of women below the mean of the social support variable in the 1st and 3rd trimesters of pregnancy, the chi-squared test was used. For the reliability analysis of the quality of life and social support questionnaires, Cronbach's α and McDonald's Ω values were used. The total sample of 188 women was used to calculate these values. Finally, Spearman's correlation was used to compare quantitative variables. The level of significance in this study was established at $p < 0.05$.

Results

Socio-demographical and gynecobstetric characterics

The sample consists of 188 women with an average age of 33.75 years (SD 4.70). The age range ranged from 20 to 48 years. There are no statistically significant differences between the age of the pregnant woman and QoL at any age cut-off point.

Table 1 shows the socio-demographic and gynecobstetric characteristics of the sample. Through this table, we can observe that 61.7 % of the sample corresponds to primiparous women, 80.9 % are married or cohabiting with their partners, 27.7 % have experienced a previous miscarriage, 8 % conceived the current pregnancy through assisted reproductive techniques, 15.4 % have undergone a cesarean section in previous pregnancies, and 72.9 % are committed to exclusively breastfeeding their baby, compared to 5.9 % who prefer artificial feeding. The majority of women (66.5 %) reside in urban areas, with only 3.2 % being foreigners. 53.8 % of the participants had completed university or postgraduate studies.

Quality of life

The questionnaire SF-36 shows good overall internal consistency of the test with Cronbach's α and McDonald's Ω values exceeding 0.91. In line with other referenced studies, good internal consistency is observed in all its dimensions with Cronbach's α values above 0.77, with the

Table 1
Descriptive analysis of sample.

Sociodemographic and gynecobstetric variables		$N = 188$ (100 %)
What is the highest level of education attained?	University Education	102 (53,8 %)
	Secondary Education	81 (43.0 %)
	Primary Education	5 (2.7 %)
Parity	Primipara	116 (61.7 %)
	Multipara	72 (38.3 %)
Marital status	Married/cohabiting	152 (80.9 %)
	Single/widowed	36 (19.1 %)
Previous abortions	None	136 (72.3 %)
	One or more	52 (27.7 %)
Breastfeeding intention	I have not thought about it yet	8 (4.3 %)
	Mixed breastfeeding	32 (17 %)
	Breastfeeding	137 (72.9 %)
	Artificial breastfeeding	11 (5.9 %)
Area of residence	Rural	63 (33.5 %)
	Urban	125 (66.5 %)
Pregnancy	Spontaneous	173 (92.0 %)
	Assisted reproduction	15 (8 %)
Nationality	Spanish	182 (96.8 %)
	Foreign	6 (3.2 %)
Previous cesarean section	Yes	29 (15.4 %)
	No	159 (84.6)

exception of the "social functioning" dimension (Table 2).

In the first trimester, it is observed that the three lowest scores correspond to the dimensions of vitality, bodily pain, and physical role, with the first two obtaining mean scores below 50 points, indicating a below-average health state. Conversely, women achieve the highest scores in the dimensions of physical functioning and general health. Both the physical and mental summary components are below the 50th percentile. In the third trimester, it is observed that the dimensions with the lowest scores are role physical, vitality, and bodily pain; all three have scores below the 50th percentile. Conversely, we find the highest scores in general health, physical functioning, role emotional, and mental health, with scores above the 50th percentile. The behavior of the summary components is different, as the summary of the physical component has decreased, while the summary of the mental health component has increased in this 3rd trimester of pregnancy.

QoL during pregnancy decreases in the 3rd trimester in the following dimensions ($p < 0.05$): physical functioning, physical role, bodily pain, and the physical component summary. On the contrary, QoL improves in the 3rd trimester in dimensions related to mental health, specifically in the role emotional, mental health, and the mental component summary. As for general health, vitality, and social functioning, the results did not show significant differences between the first and third trimesters (table 2).

Through the chi-square test and the "mental health" dimension, we analyze the proportion of women at risk of depression in both trimesters. We observe that 29.8 % ($n = 56$) of women in the 1st trimester is at risk of depression, as they score equal to or lower than 42 points in MCS. This value slightly decreases in the 3rd trimester to 22.9 %, with 43 women at risk of depression. In this case, there is no statistically significant difference ($p = 0.23$).

Parity appears to influence the QoL of pregnant women in the first and third trimesters.

Higher average scores are observed in primiparous women compared to multiparous women. Additionally, this difference in means is statistically significant in the first trimester in the vitality dimension. In the third trimester, these mean differences are also statistically significant inrole physical, bodily pain, general health, vitality and the physical component summary. These data suggest that multiparous women have a lower quality of life than primiparous women, especially in the 3rd trimester of pregnancy (Table 3).

In the mean analysis between women who have had spontaneous pregnancies and those who have undergone assisted reproduction techniques, we see that in the first trimester, women with spontaneous pregnancies score higher in QoL all dimensions and summary components; moreover; these mean differences are significant ($p < 0.05$) in the dimensions of physical function (86.27 vs 60.33).The results in the 3rd trimester also show that women with spontaneous pregnancies obtain higher average scores in all dimensions and summary components. However, in this case, only the difference observed in the social functioning dimension (67.05 vs 54.16) is significant ($p < 0.05$). These findings suggest that the manner of conception influences the quality of life of pregnant women in the physical sphere in the 1st trimester and in social functioning in the 3rd trimester.

In the analysis of quality of life based on the history of miscarriages in previous pregnancies, it is observed that in the first trimester, there are no statistically significant differences in any dimension or summary component, except for the mental health dimension, in which women without previous miscarriages scored 68.59 points compared to 61.00 for women with one or more previous miscarriages. In the 3rd trimester, there are no statistically significant differences in the quality of life between women with or without this obstetric history. These results seem to indicate that the quality of life during pregnancy for women with previous miscarriages is negatively affected in the first trimester in the mental health dimension compared to those without this obstetric history.

The level of education also seems to influence the quality of life during pregnancy, both in the 1st and 3rd trimesters. Women with primary education obtain lower mean scores in all dimensions and summary components than women with secondary or university education. Using the Kruskal-Wallis test with Bonferroni correction, statistically significant changes have been observed between groups.

In the first trimester, statistically significant mean differences are observed in the following dimensions:

1. Physical functioning ($p < 0.05$): Differences are observed between women with primary education (60.00) and secondary education (83.70); as well as between primary education (60.00) and university education (85.78).
2. Physical component summary ($p < 0.05$): Differences are observed between women with primary education (36.22) and secondary education (46.14); as well as between primary education (36.22) and university education (47.13).

In the case of the 3rd trimester, statistically significant changes are observed in the following dimensions:

1. Bodily pain ($p < 0.05$): Mean differences are observed between women with secondary education (39.80) and university education (48.71).
2. Role emotional ($p < 0.05$): Mean differences are observed between women with primary education (20.00) and secondary education (74.90); as well as between women with primary education (20.00) and university education (83.66).
3. Mental component summary: Differences are observed between women with primary education (31.69) and university education (49.54).

In the analysis of other social and economic variables that may

Table 2
Descriptive analysis of QoL using the SF-36 questionnaire. Wilcoxon signed-rank test.

Dimension	Internal consistency		1st trimester		3rd trimester		Wilcoxon
	α	Ω	Mean	SD	Mean	SD	p-Value
Physical functioning	0.85	0.86	84.20	19.49	66.52	20.61	**<0.001**
Role physical	0.88	0.88	52.39	42.49	29.52	38.86	**<0.001**
Bodily pain	0.83	*	48.90	27.79	44.33	21.83	**0.02**
General Health	0.77	0.80	78.31	17.31	78.15	18.63	0.85
Vitality	0.77	0.78	42.47	17.92	43.21	17.81	0.70
Social functioning	0.49	*	66.49	25.41	66.02	25.13	0.81
Role emotional	0.90	0.90	64.89	43.16	78.19	37.80	**<0.001**
Mental health	0.89	0.89	66.49	18.23	71.34	20.15	**<0.001**
PCS	0.91**	0.99**	46.42	8.47	38,88	8.39	**<0.001**
MCS			44.97	7.62	47.81	12.08	**<0.01**

Note. SD: standard deviation; PCS: physical component summary; MCS: mental component summary.

* Not assessable because it is made up of two factors; ** Total score of the 36 items.

Table 3
QoL and parity in first and third trimester. U Mann-Whitney test.

Dimension	1st trimester				U	3rd trimester				U
	Primipara		Multipara			Primipara		Multipara		
	Mean	SD	Mean	SD	p-Value	Mean	SD	Mean	SD	p-Value
Physical functioning	85.26	18.82	82.50	20.54	0.19	68.62	19.42	63.13	22.10	0.12
Role physical	56.25	40.50	46.18	45.12	0.10	35.56	39.86	19.79	35.34	**<0.01**
Bodily pain	48.28	26.69	49.92	29.64	0.84	47.67	20.90	38.94	22.36	**<0.01**
General Health	79.91	15.67	75.74	19.53	0.25	80.39	18.14	74.54	18.99	**<0.05**
Vitality	46.12	17.82	36.60	16.59	**<0.001**	46.77	16.22	37.50	18.86	**<0.01**
Social functioning	68.21	25.13	63.72	25.79	0.25	68.75	24.37	61.63	25.89	0.06
Role emotional	69.83	41.00	56.94	45.60	0.07	82.47	33.90	71.30	42.72	0.14
Mental health	69.00	15.58	62.44	21.33	0.06	72.83	18.88	68.94	21.99	0.36
PCS	46.52	7.99	46.25	9.25	0.86	40,13	8,24	36,87	8.29	**<0.05**
MCS	45.44	7.64	44.22	7.59	0.27	48.94	11.30	46.00	13.10	0.21

Note. U:: U Mann-Whitney; SD: standard deviation; PCS: physical component summary; MCS: mental component summary.

influence the quality of life during pregnancy, the following results are observed:

1. The area of residence seems to influence the quality of life during pregnancy. While no statistically significant mean differences were observed in the first trimester, in the third trimester, mean differences were observed in the general health dimension, with higher values in women residing in rural areas (82.09) compared to those residing in urban areas (76.16) ($p < 0.05$).
2. No statistically significant mean differences were found in the quality of life in any trimester between Spanish and foreign women.
3. In the case of marital status, it was observed that married women or those living with their partners showed higher and statistically significant means (68.16) in the physical function dimension in the third trimester ($p < 0.05$) compared to single or widowed women (59.48). In the rest of the dimensions and summary components of the third trimester and in the first trimester, no statistically significant mean differences were observed based on marital status.

Social support

Analyzing the social support data, we note through the first question that there are no differences in the number of close friends or family members that pregnant women have in the 1st trimester (mean 7.66, SD 4.73) and 3rd trimester (mean 7.66, SD 5.65).

According to the values shown in Table 4, the mean values of social support in the 3rd trimester are lower than in the first trimester. The mean difference is statistically significant in the affective support and total score. These data suggest that women in the third trimester have less social support than women in the first trimester, especially in the affective support dimension.

The MOS-SSS questionnaire shows broad internal consistency with Cronbach's α and McDonald's Ω values exceeding 0.91 for its total score. The analysis of its dimensions similarly reveals broad internal consistency with values above 0.87(Table 4).

On the other hand, if we analyse the descriptives of the sample in relation to the mean we can observe how our population obtains higher means in all dimensions; we also observe a very low percentage of women with scores below the mean during the first trimester, which suggests a good social support of the women in the sample at the beginning of pregnancy. However, although all dimensions remain above average, as pregnancy progresses, the percentage of women with scores below average increases, reaching 10 % for emotional support in the third trimester. This difference is statistically significant in all dimensions and in the final score, suggesting that social support in the third trimester decreases in relation to the first trimester (Table 4).

Analyzing social support with sociodemographic and gynecological-obstetric variables, we observed that, on one hand, primiparous women obtained higher scores in all dimensions and the total score of the MOS-SSS in both the 1st and 3rd trimesters. However, these mean differences have not been statistically significant in any case. On the other hand, it is observed that married women or those living with a partner obtain higher scores in all dimensions and total scores in both the 1st and 3rd trimesters, suggesting that single women have less social support than married women or those living with a partner. This mean difference is statistically significant in the 1st trimester in the dimensions of emotional support, tangible support and total score. In the 3rd trimester, this mean difference is statistically significant in all dimensions and total score, except emotional support dimension (Table 5).

In the analysis of social support in relation to the level of education, we observed higher scores in all dimensions and total score among women with university education compared to those with primary or secondary education. This mean difference was statistically significant in all dimensions and total score during the 3rd trimester. These data suggest that women with university education have greater social support than women with primary education.

Finally, no statistically significant differences were observed between social support and variables such as nationality, area of residence, history of previous miscarriages, use of assisted reproduction techniques and maternal age.

Table 4
Descriptive MOS-SSS and hypothesis testing.

Dimension	Internal consistency		1st trimestre	3rd trimestre	Wilcoxon	1st trimestre		3rd trimestre		Chi ^{2}
	α	Ω	Mean	Mean	p-Value	Women below mean		Women below mean		p-Value
						AF	%	AF	%	
Emotional support	0.97	0.97	36.74	35.98	0.67	12	6.4 %	19	10.1 %	**<0.001**
Tangible support	0.87	0.87	18.27	18.00	0.29	12	6.4 %	15	8.0 %	**<0.001**
Positive social interaction	0.92	0.92	18.60	18.27	0.10	8	4.3 %	12	6.4 %	**<0.001**
Affective support	0.91	0.91	14.48	14.11	**<0.001**	3	1.6 %	9	4.8 %	**<0.001**
Total score	0.97	0.97	88.09	86.37	**<0.05**	8	4.3 %	11	5.9 %	**<0.001**

Note. AB: Absolut Frequency.

Table 5
Descriptive MOS-SSS and marital status. U Mann-Whitney test.

Dimension	1st trimester				U	3rd trimester				U
	Single		Married			Single		Married		
	Mean	SD	Mean	SD	p-Value	Mean	SD	Mean	SD	p-Value
Emotional support	35.89	6.81	36.95	5.90	**<0.05**	34.42	7.36	36.35	6.19	0.05
Tangible support	17.25	3.52	18.51	2.62	**<0.05**	16.89	3.80	18.26	2.78	**<0.05**
Positive social interaction	18.11	2.98	18.72	2.54	0.06	17.25	3.38	18.51	2.55	**<0.05**
Affective support	14.05	1.90	14.59	1.18	0.05	13.33	2.76	14.30	1.57	**<0.05**
Total score	85.31	13.63	88.75	11.06	**<0.01**	81.89	16.38	87.43	11.68	**<0.05**

Note. SD: standard deviation; U: U Mann-Whitney.

Correlations spearman between social support and QoL

All dimensions of the SF-36 are positively related to the total score of the MOS-SSS in both the 1st and 3rd trimesters. This implies that the higher the self-perceived social support, the higher the quality of life (QoL) in both the 1st and 3rd trimesters (Table 6).

Discussion

The main objective of this research was to describe how QoL and social support evolve at the beginning and end of pregnancy in pregnant women in northern Spain. As secondary objectives, the aim is to examine the relationship between social support and QoL during pregnancy and to analyse the impact of socio-demographic and gynecobstetric variables on QoL and social support during pregnancy.

Through this research, we observed how the QoL changes between the 1st and 3rd trimesters of pregnancy. Specifically, in terms of QoL dimensions, there is a worsening at the end of pregnancy in the physical summary component, as well as in dimensions predominantly related to the physical aspect, such as physical functioning, role physical, and bodily pain. Conversely, we noticed an improvement in the mental summary component, as well as its dimensions, role emotional and mental health, towards the end of pregnancy. This could be attributed to functional limitations due to physical issues and symptoms related to increased weight during pregnancy and urinary incontinence (Kok et al., 2016). In contrast, there are recent studies indicating a decline in QoL at the end of pregnancy (Boutib et al., 2023; Wu et al., 2021a). Some studies have not observed a relationship between QoL and different trimesters of pregnancy (Alzboon and Vural, 2019).

Table 6
Spearman correlation between MOS-SSS and SF-36.

SF-36		MOS-SSS total		MOS-SSS total	
		1st trimester		3rd trimester	
		Spearman	*p*-Value	Spearman	*p*-Value
1st trimester	**Physical functioning**	0.15	**<0.05**	0.19	**<0.01**
	Role physical	0.19	**<0.01**	0.24	**<0.001**
	Bodily pain	0.16	**<0.05**	0.24	**<0.001**
	General Health	0.30	**<0.001**	0.36	**<0.001**
	Vitality	0.28	**<0.001**	0.32	**<0.001**
	Social functioning	0.27	**<0.001**	0.24	**<0.01**
	Role emotional	0.26	**<0.001**	0.21	**<0.01**
	Mental health	0.31	**<0.001**	0.32	**<0.01**
3rd trimester	**Physical functioning**	0.08	**<0.001**	0.01	**<0.01**
	Role physical	0.26	**<0.05**	0.20	**<0.05**
	Bodily pain	0.17	**<0.001**	0.16	**<0.001**
	General Health	0.25	**<0.001**	0.29	**<0.001**
	Vitality	0.29	**<0.001**	0.33	**<0.001**
	Social functioning	0.31	**<0.01**	0.39	**<0.001**
	Role emotional	0.24	**<0.001**	0.35	**<0.001**
	Mental health	0.33	**<0.001**	0.37	**<0.001**

In a recent longitudinal study conducted in Granada, Spain, the QoL of pregnant women was explored in the first and third trimesters, revealing a widespread decrease in all dimensions and summary components by the third trimester (Rodríguez-Blanque et al., 2020). Notably, higher scores in the first trimester were observed in the dimensions of physical function and social function, in contrast to our study where dimensions of physical function and general health predominated. In the third trimester, the highest scores were recorded in the dimensions of social function and general health, while our sample stood out in general health and emotional role. This study also reported a risk of depression between 44 % and 73 %, figures considerably higher than those found in our research. These data suggest that our population has a poorer physical condition at the beginning of pregnancy; however, they exhibit better mental health at the end.

Another study in Mallorca, Spain, in 2021, assessed the QoL of women between 14 and 20 weeks of gestation using the EUROQOL-5D health questionnaire. This revealed that the dimension with the lowest score was bodily pain, followed by anxiety/depression, with a risk of anxiety or depression ranging from 10 % to 14 % of pregnant women (Navas et al., 2021). Despite being a study in the second trimester, we observe how our population has a higher risk of depression in the first and third trimesters, indicating a worsening of mental health. In contrast, a longitudinal study conducted in China in 2021 concluded that the risk of depression remains constant throughout the three trimesters and always exceeds 25 % of the population (Wu et al., 2021).

At the beginning of pregnancy, women in our study show higher scores in the dimensions of the physical component. This could be mainly attributed to the fact that, during the first trimester, concerns about the baby's health and fear of pregnancy loss predominate over physical factors, which become more evident as, for example, pregnancy weight increases. On the other hand, we notice that the mental aspect improves towards the end of pregnancy, albeit at the expense of a deterioration in the dimensions of the physical component. A longitudinal study conducted in Taiwan in 2010 yielded similar results, with the exception of the general health dimension, whose value increased from the first trimester to the end of pregnancy (Chang et al., 2014).

Regarding the determining factors of QoL, we have not observed differences between it and maternal age at any cutoff point, suggesting that maternal age does not influence QoL at the beginning or end of pregnancy. Other studies conclude that older maternal age is associated with worse QoL (Da Costa et al., 2010; Lacasse et al., 2008). As for assisted reproduction techniques, we observed that women undergoing these treatments obtained poorer QoL in the first and third trimesters in physical function and physical summary component compared to women who conceived spontaneously. This may be a result of fertility treatments and the stress associated with achieving pregnancy for these women. These findings align with existing literature (Chang et al., 2014; Martín-Vázquez et al., 2023).

The literature lacks consensus regarding the influence of low parity on the QoL during pregnancy. While some authors identify it as a protective factor for optimal QoL (Alzboon and Vural, 2019; Vinturache et al., 2015), others conclude that low parity is a risk factor associated with lower gestational QoL (Asadian et al., 2014; Wang et al., 2013). Our

study indicates primiparity as a protective factor for QoL, possibly attributable to increased self-demand when having previous responsibilities with other children, which could impact the QoL.

On the other hand, the level of education seems to influence the quality of life of pregnant women in the 1st and 3rd trimesters. This research shows higher mean scores in all dimensions and quality of life among women with university education compared to those with primary education. Moreover, these differences are statistically significant in the first trimester in the physical function dimension and physical component summary, and in the 3rd trimester in the emotional role dimension and mental component summary. These data suggest that women with primary education have a lower quality of life in the first trimester than women with university education, particularly in the mental sphere; conversely, in the 3rd trimester, the decrease in quality of life for women with primary education occurs mainly in the mental sphere. These findings are consistent with recent research concluding that a low level of education predisposes to a lower quality of life during pregnancy (Da Costa et al., 2010; Fatemeh et al., 2010; Li et al., 2012; Wang et al., 2013).

As for social support, it has been observed that it does not remain stable throughout pregnancy, decreasing in the third trimester. In addition, it has been shown that at the end of pregnancy the number of women with below-average social support increases. These data are intriguing because, in the first trimester, women have barely shared the news of pregnancy with their support network, and one would expect greater support at the end of pregnancy, when women begin to plan for childbirth and consider infant care in the early postpartum weeks. Recent research in Mexican pregnant women showed that there were no significant differences between perceived emotional support and trimesters of pregnancy (Rodríguez-Leis and Flores-Gallegos, 2018). In addition, the results of a recent meta-analysis show that low social support during pregnancy is directly associated with an increased risk of anxiety, depression and self-harm (Bedaso et al., 2021).

Regarding sociodemographic factors, we observed greater social support in married and cohabiting women, in contrast to single women who, as other studies show, require greater social support because they lack the support of their partner (Phiri et al., 2023).

Regarding gynecobstetric factors, no differences were observed among women based on parity; this finding contrasts with that obtained in a recent investigation which showed greater social support in the first trimester among primiparous women (Cho et al., 2022).

Through this research, it is observed that social support correlates positively with the QoL in all its dimensions. This implies that the social support of pregnant women acts as a protective factor for good QoL. This assertion is supported by other recent studies (Alnuaimi et al., 2022; Hee Jeong et al., 2023). A study conducted in Australia 2023 also positively related social support and quality of life in its mental component (Bedaso et al., 2023). However, a study conducted in Jordan in 2018 argues that social support and perceived stress do not affect the QoL of pregnant women (Alzboon and Vural, 2019).

The rigorous evaluation of QoL and social support during gestation emerges as a pivotal new approach in prenatal care. This study emphasizes the importance of utilizing objective and reliable measurement tools to identify areas susceptible to improvement. Such identification enables the strategic planning of nursing interventions with the purpose of enhancing the QoL of pregnant women. This proactive approach not only mitigates the risk of anxiety and depression but also contributes to reducing maternal-fetal morbimortality. Standardizing these assessments in all prenatal check-ups is recommended to enhance the overall QoL for pregnant women. As social, economic, and demographic characteristics seem to influence, to a greater or lesser extent, the quality of life and social support of women during pregnancy, it would be interesting to consider specific care for women at risk of social or economic exclusion.

Conclusion

This study reveals significant variations in the QoL and social support throughout gestation. While the QoL experiences a decline in the physical component towards the end of pregnancy, there is an increase in the mental component during the same stage. Additionally, it is noteworthy that primiparous women exhibit better QoL compared to multiparous women throughout pregnancy. Regarding social support, a decrease is observed towards the end of gestation, with marital status emerging as a crucial variable negatively impacting single or widowed women. Although the risk of depression decreases in the third trimester, it persists at levels exceeding 22.9 % throughout gestation. The positive correlation between social support and QoL underscores the importance of standardizing the monitoring of these variables during health check-ups. In summary, these findings highlight the complex dynamics of QoL and social support during pregnancy, emphasizing the need for specific interventions and the standardization of care protocols to optimize maternal-fetal health outcomes. Finally, these researchers believe that both comprehensive prenatal consultations not exclusively focused on the biomedical aspect and early, universal childbirth preparation groups for all pregnant women would allow for the detection of alterations in quality of life and social support. This would enable the implementation of corrective measures during these groups, thereby improving the quality of life and social support of the pregnant women, and, secondarily, their physical and mental health.

Strengths and limitations

Despite the longitudinal design of this study, several limitations must be taken into account. The absence of a variable analysis in the second trimester hinders obtaining information about the QoL and social support during the middle of pregnancy. On the other hand, as we have seen and in agreement with other similar studies, the "social functioning" dimension of the SF-36 lacks good internal consistency. This suggests that in pregnant women it is necessary to use another specific questionnaire to analyze perceived social support, such as the MOS-SSS. Another limitation is related to the composition of the studied population; firstly, only women who reached the 37th week of gestation were included, excluding those with gestational losses or premature births. Additionally, the applicability of the results should be interpreted with caution, as the sample is limited to pregnant women from a health zone in a region of a single autonomous community in Spain, restricting the generalization of conclusions to the entire Spanish population. In future research, it would be essential to address QoL and social support in all trimesters through a multi-centre study covering several regions of Spain as well as other countries.

CRediT authorship contribution statement

Cristian Martín-Vázquez: Writing – review & editing, Writing – original draft, Methodology, Investigation, Formal analysis, Conceptualization. **Jose David Urchaga-Litago:** Supervision, Conceptualization. **Rubén García-Fernández:** Writing – review & editing. **Natalia Calvo-Ayuso:** Writing – review & editing. **Enedina Quiroga-Sánchez:** Investigation, Formal analysis. **Cristina Liébana-Presa:** Supervision, Methodology, Conceptualization.

Declaration of competing interest

The authors of this article declare that they have no conflicts of interest that could influence the results or interpretation of the research. All authors have reviewed and approved the manuscript prior to submission and affirm their commitment to honesty and scientific integrity in the conduct and presentation of this work.

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