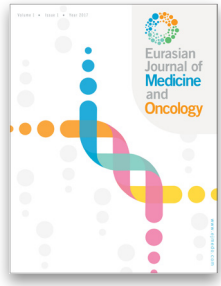
EJMO

DOI: 10.14744/ejmo.2017.74046
EJMO 2017;1(4):216-223



Research Article

Adolescent or Advanced Age Pregnancy: What About Quality of Life?

Elif Yilmaz

Department of Obstetrics and Gynecology, Dr. Sami Ulus Women's and Children's Health Teaching and Research Hospital, Ankara, Turkey

Abstract

Objectives: The aim of this study was to evaluate the impact of age and other socio-demographic factors that may be associated with poor health status during pregnancy.

Methods: Of a total of 300 pregnant women included in the study, 100 were adolescents (≤19 years), 100 were average-aged (20 to 34 years), and 100 were of advanced age (≥35 years). After obtaining sociodemographic and obstetric information in a face-to-face interview, the women completed the Short Form 36 Health Survey (SF-36) questionnaire. The SF-36 scores were compared between groups.

Results: It was determined that the quality of life (QoL) scores in pregnancy were generally lower when compared to non-pregnant women. All of the QoL subscores were found to be significantly higher in the average-aged group (p=0.000). The physical component summary (PCS) scores were found to be lowest in the advanced-age group, and the mental component summary (MCS) scores were lowest in the adolescent group (p=0.000). Except for the PCS, which was higher in the adolescent group, no statistically significant difference in the other subscores was found between the adolescent and advanced age groups (p=0.000). According to multivariable regression analysis, age, unplanned pregnancy, lack of sharing problems with spouse/relatives, and uneasiness within the family were found to be associated with poorer PCS and MCS scores.

Conclusion: Both healthcare professionals and the individuals closest to pregnant women need to be aware of the importance of both physical and mental factors in maternal well-being, especially in adolescent and advanced-age groups.

Keywords: Adolescent, advanced age, health, life quality, pregnancy

Cite This Article: *Yilmaz E. Adolescent or Advanced Age Pregnancy: What About Quality of Life?. EJMO. 2017; 1(4): 216-223*

Quality of life (QoL) is an expression of well-being, including all of the emotional, social, and physical aspects of an individual's life.[1] In healthcare, health-related quality of life (HRQoL) is an assessment of how an individual's well-being may be affected over time by a disease, disability, or disorder.[2] In significant periods of women's lives, such as during pregnancy, QoL may be negatively affected. Although it is regarded as a normal process in the female life cycle, pregnancy is also a period characterized by many intense physical and physiological changes. Even in uncomplicated pregnancies, both these changes and emotional stress can have a significant impact on the well-being of an expectant mother. In recent years, due to changes in the health concept, HRQoL has gained more importance. Several studies that explored changes in general health and functional status during pregnancy have reported decreases in HRQoL scores due to lower levels of vitality, physical and social functioning, and limitations due to emotional problems in pregnant women when compared with non-pregnant women.[3, 4] It has been demon-

Address for correspondence: Elif Yilmaz, MD. Sami Ulus Kadın ve Cocuk Saglıgı Egitim ve Arastırma Hastanesi, Kadın Hastalıkları ve Dogum Anabilim Dalı, Babur Caddesi, Altindag, Ankara, Turkey
Phone: +90 532 706 08 91 **E-mail:** elifakkasyilmaz@gmail.com
Submitted Date: August 26, 2017 **Accepted Date:** September 29, 2017 **Available Online Date:** October 30, 2017

strated that some physical symptoms related to pregnancy, such as dizziness, fatigue, nausea and vomiting, heartburn, regurgitation, indigestion, shortness of breath, and trouble sleeping, are significantly associated with lower scores and have negative impacts on women's lives during pregnancy. [3, 5, 6] Among sociodemographic variables, lower education and socioeconomic levels, the lack of a partner, and less social support predicted poorer health status during pregnancy.[7] In addition, young age, working long hours, and an unplanned pregnancy were also found to be factors associated with greater declines in health status.[8, 9] For all that, still, little is known about the changes in health status during pregnancy and factors associated with poorer life quality during this period.

The objective of this study was to compare the HRQoL scores of adolescent, average-aged, and advanced-age pregnant women and to evaluate the impact of age and other sociodemographic factors that may be associated with poor health status during pregnancy.

Purpose

Despite the increased importance of the HRQoL concept in recent years, much remains to be learned with regard to health changes that occur during pregnancy and the effect of age and other sociodemographic risk factors on the HRQoL of pregnant women, which is especially important for clinicians. This study revealed that age and other sociodemographic factors have a significant effect on the HRQoL scores of pregnant women. These results will be valuable to inform obstetricians and healthcare staff, in particular, about the importance of both physical and mental factors in maternal well-being, especially in risky groups like adolescents and those of advanced age.

Methods

This was a prospective, cross-sectional study of the HRQoL of pregnant women attending the outpatient antenatal clinic of a maternity and women's health training and research hospital in Ankara, the capital of Turkey, in a semiurban region with low to middle socioeconomic demographic characteristics between January and June 2015. A total of 300 pregnant women who presented for their routine antenatal follow-up were included in the study. Three groups of an equal sample size of adolescent, average-aged, and advanced-aged pregnant women were formed (100 women ≤19 years of age, 100 20-35 years, and 100 ≥35 years). Women were included if they were in a viable, singleton pregnancy without congenital malformation, and of gestational age of 22 to 28 weeks. They were excluded if they had any disease or complication related to pregnancy (gestational diabetes, hypertension, incompetent cervix, polyor oligohydramnios), systemic or chronic disease (thyroid dysfunction, renal, cardiovascular, psychiatric or neurological disease, cancer, or leukemia or other blood disorder, like anemia). Foreigners were also excluded. The study was approved by the Ethics Committee. Participants who met the requirements and agreed to take part in the study were informed about the research, and written consent was obtained. Informed, written consent was also obtained from the parents of participants who were younger than 18 years.

Data Collection

After determining gestational age with obstetric ultrasonography and a routine pregnancy examination, women were informed about the Short Form 36 (SF-36) Health Survey by the investigator. Sociodemographic data and obstetric information of the women were obtained in a face-to-face interview using a questionnaire that included questions about age, educational level and the working status of the woman and her spouse, total monthly income, health insurance, family structure, perceived emotional support from the spouse/those closest, smoking, and obstetric history (whether or not the pregnancy was planned, gravida/parity, regular antepartum care).

After completion of the questionnaire, the SF-36 scale was administered. The scale was completed by the woman in a quiet, private room. The groups were compared according to SF-36 scores.

Outcome Measures

All participants were assessed on the domains of their perceived health-related QoL. The SF-36, a patient-reported survey of health, is one of the most commonly used self-rating scales to evaluate health status. It contains 36 questions in 8 subscales that consider symptoms of the last 4 weeks. The total score is determined by calculating the subscale scores of physical functioning, role limitations due to physical health problems, bodily pain, general health perceptions, vitality, social functioning, role limitations due to emotional problems, and mental health. The first 4 scales are summarized into the physical component summary (PCS) and the last four scales into the mental component summary (MCS). The score for each subscale ranges from 0-100 and is directly proportional to QoL, with higher scores representing a better QoL. The reliability and validity study of the Turkish version of the scale was established in 1999.[19] Determination of population norms for the Turkish version of SF-36 was conducted by Demiral et al. in 2006.[20]

Statistical Analysis

Statistical analyses were performed using IBM SPSS Statis-

Table 1. Socio-demographics and obstetric characteristics of the groups

Characteristics	Adolescent	Age groups Middle age	Advanced age	P
Age, years	18.5 (15-19)	27 (20-34)	37 (35-45)	0.000
Gestational weeks	26 (22-28)	26 (22-28)	25 (22-28)	0.366
Duration of marriage, years	1 (1-3)	3 (1-12)	9 (2-21)	0.000
Number of individuals at home	2 (2-7)	3 (2-7)	4 (2-9)	0.000
Antepartum care	4 (1-5)	4 (1-5)	4 (1-5)	0.111
Total monthly income, TL	1600 (1100-6000)	1750 (900-6000)	1800 (1100-6500)	0.047
Living children	0 (0-2)	0 (0-4)	2 (0-5)	0.000
Educational level (%)				0.003
Elementary school/less	66 (66)	55 (55)	50 (50)	
High school	34 (34)	45 (45)	50 (50)	
Employment status (%)				0.001
Unemployed	92 (92)	76 (76)	72 (72)	
Employed	8 (8)	24 (24)	28 (28)	
Education level of spouse (%)				0.000
Elementary school/less	51 (51)	26 (26)	31 (31)	
High school	49 (49)	74 (74)	69 (69)	
Emploment status of spouse (%)				0.017
Unemployed	12 (12)	4 (4)	3 (3)	
Employed	88 (88)	96 (96)	97 (97)	
Health insurance (%)				0.026
Yes	86 (86)	95 (95)	95 (95)	
No	14 (14)	5 (5)	5 (5)	
Regular antepartum control (%)				0.124
Yes	77 (77)	95 (95)	95 (95)	
No	23 (23)	5 (5)	5 (5)	
Family structure (%)				0.010
Nuclear	68 (68)	88 (88)	82 (82)	
Extended	32 (32)	12 (12)	18 (18)	
Planned pregnancy (%)				0.083
Yes	64 (64)	81 (81)	85 (85)	
No	36 (36)	19 (19)	15 (15)	
Smoking during pregnancy (%)				0.317
Yes	14 (14)	69 (69)	54 (54)	
No	86 (86)	31 (31)	46 (46)	
Sharing problems with spouse/relatives				0.021
Yes, always	46 (46)	64 (64)	44 (44)	
Yes, sometimes	26 (26)	23 (23)	30 (30)	
No	28 (28)	13 (13)	26 (26)	
Discord/uneasiness within the family (%)				0.000
Yes, always	20 (20)	9 (9)	30 (30)	
Yes, sometimes	22 (22)	19 (19)	32 (32)	
No	58 (58)	72 (72)	38 (38)	

Continuous variables are reported as median, max-min. Categorical variables are reported as number (percentage).

tics for Windows, Version 23.0 software (IBM Corp., Armonk, NY, USA). Continuous variables were presented with descriptive statistics (mean, standard deviation, median, minimum, maximum) and categorical variables were presented as frequencies (n, percent). The suitability of the measurements to normal distribution was determined using the Kolmogorov-Smirnov test and parametric tests were used for normally distributed variables; otherwise, analyses were conducted with nonparametric tests. In the comparison of 2 independent groups, the independent samples t-test was

Table 2. Average PCS and MCS scores in the Turkish, non-pregnant, female population and in the study group.

PCS	$\bar{X}$±SS	MCS	$\bar{X}$±SS
Turkish female population	46.6±9.9	Turkish female population	47.3±9.8
Whole study group	41.9±7.4	Whole study group	41.0±8.1
Adolescent	41.4±6.1	Adolescent	36.7±6.2
Average age	46.2±7.7	Average age	46.6±6.6
Advanced age	38.0±6.0	Advanced age	39.8±8.0

MCS: Mental component summary; PCS: Physical component summary.

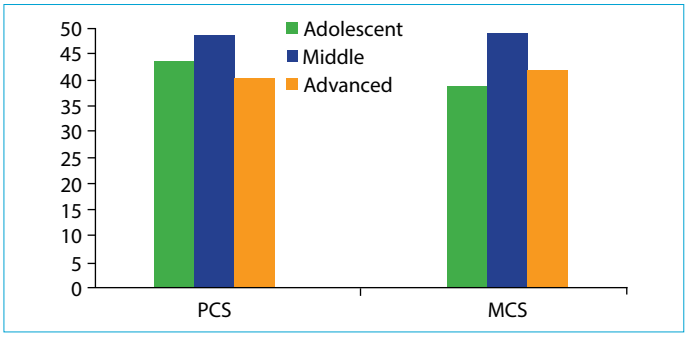


Figure 1. Comparison of the PCS and MCS scores of the groups. MCS: Mental component summary; PCS: Physical component summary.

used as a parametric test and the Mann-Whitney U test as a nonparametric test. In the comparison of 3 or more independent groups, analysis of variance was used as a parametric test and the Kruskal-Wallis H test as a nonparametric test. Differences between 2 continuous variables were analyzed using Spearman's rho correlation, and chi-square for 2 categorical variables. Multivariable linear regression analyses were used to show independent variables associated with PCS and MCS scores. A p value of <0.05 was considered statistically significant.

Results

Sociodemographic Characteristics

The sociodemographic characteristics of the women are shown in Table 1. The median age of the adolescent group was 18.5 years (range: 15-19 years), in the average-aged group it was 27 years (range: 20-34 years), and in the advanced-age group it was 37 years (range: 35-45 years). Duration of marriage, number of individuals at home, and living children were found to be significantly different between groups, depending on age, as expected (increasing with age) (p=0.000). Total monthly income was lowest in the adolescent group (p=0.047). The educational level and employment status of both the woman and the spouse was significantly higher in the advanced-age group (p=0.003; p=0.001; p=0.000; p=0.017). The number of those with health insurance was lower in the adolescent group than in other groups (p=0.026). Living with extended family was more common in the adolescent group (p=0.010). Sharing problems with spouse was highest in the middle group, and lowest in the adolescent group (p=0.021). Discord within the family was lowest in the average-age group and highest in the advanced-age group (p=0.000). Other sociodemographic factors were not statistically significant.

SF-36 Scores

The median PCS score was 41.9±7.4 and the mean MCS score was 41.0±8.1 for the whole group. Table 2 illustrates the average PCS and MCS scores found in our study population contrasted with norms in the general Turkish, non-pregnant, female population.[20] The SF-36 scores of the overall study group were lower than that of the general Turkish female population, which can be explained by the fact that pregnancy alone affects HRQoL (PCS 46.6/41.9 and MCS 47.3/41.0).

The average-aged group had the highest average PCS and MCS scores. PCS scores were the lowest in the advanced-age group and MCS scores were the lowest in the adolescent group (Fig. 1) (Table 3).

All of the subscores (physical functioning, bodily pain, general health, vitality, social function, emotional problems, and mental health subscores) were found to be significantly higher in the middle group (p=0.000). With the exception of the physical functioning subscore, which was higher in the adolescent group, no statistically significant difference was observed between adolescent and advanced-age groups in the remaining subscores (p=0.000) (Table 3).

Multivariable regression analysis performed to determine the effects of the variables on PCS and MCS scores revealed that age, sharing problems with spouse/relatives, and uneasiness within the family were factors significantly associated with PCS scores, whereas age, intended pregnancy, and sharing problems with spouse/relatives were found to be factors that influenced MCS scores with statistical significance (Tables 4 and 5). PCS scores were higher among working women, those who shared problems with their spouse, and those who don't have uneasiness within the family. MCS scores were higher in women with a planned pregnancy and among those who shared problems with their spouse. PCS scores decreased with increasing age, whereas MCS scores increased with increasing age.

Discussion

The results of this study demonstrate important changes in the HRQoL scores for women over the course of pregnancy and a significant relationship between QoL and age in preg-

Table 3. Health-related quality of life scores for the groups for each of the domains of the Short Form 36 Health Survey

Domain	Mean HRQoL scores			P
	Adolescent	Middle age	Advanced age	
Physical summary component (mean) (SD)	41.4 6.07	46.2 7.65	38 5.97	p=0.000 D (1-2,3) (2-3)
Mental summary component (mean) (SD)	36.7 6.15	46.6 6.59	39.8 8.02	p=0.000 D (1-2,3) (2-3)
Physical functioning (median) [min-max]	70 [30-100]	80 [5-100]	55 [0-100]	p=0.000 D (1-2,3) (2-3)
Role physical (median) [min-max]	50 [0-100]	75 [0-100]	25 [0-100]	p=0.000 D (2-1,3)
Bodily pain (median) [min-max]	53 [10-100]	74 [22-100]	52 [0-100]	p=0.000 D (2-1,3)
General health (median) [min-max]	45 [5-87]	62 [15-92]	47 [5-92]	p=0.000 D (2-1,3)
Vitality (median) [min-max]	45 [5-80]	60 [5-95]	45 [0-85]	p=0.000 D (2-1,3)
Social function (median) [min-max]	50 [0-100]	75 [12.5-100]	50 [0-100]	p=0.000 D (2-1,3)
Role limits due to emotional problems (median) [min-max]	33.3 [0-100]	66.7 [0-100]	33.3 [0-100]	p=0.000 D (2-1,3)
Mental health (median) [min-max]	56 [12-88]	74 [20-100]	62 [12-100]	p=0.000 D (2-1,3)

D: Difference; HRQoL: Health-related quality of life; SD: Standard deviation.

nant women. All the subscores of the SF-36 (physical functioning, bodily pain, general health, vitality, social function, emotional problems, and mental health subscores) were found to be significantly higher in the average-age group. According to the results of the multivariable regression analysis, both age and the ability to share problems with her spouse/relatives were factors significantly associated with higher PCS and MCS scores, whereas being unemployed and uneasiness within the family were associated with a poorer PCS score and unplanned pregnancy with a poorer MCS score.

The duration of marriage, the number of individuals at home, and living children were found to be significantly different between groups according to age, as expected (increasing with age). The educational level, employment status, total monthly income, and health insurance rate of adolescents and their spouses were significantly lower than in adult groups, which reflects the severity of economic problems, particularly among adolescents. Unfortunately, early marriage in our country, especially in low socioeconomic level groups, is still very common, and limits the educational and employment opportunities of these young people. The finding that many in the adolescent group live with extended family due to economic hardship is not surprising.

The average PCS and MCS SF-36 scores in our study group were lower than in the general Turkish female population, which can be explained by the fact that pregnancy itself affects HRQoL. Although regarded as merely a physiological process and one of the most exciting periods of a women's life, both the physical and physiological changes and mental fluctuations that occur during pregnancy may negatively affect the QoL of pregnant women. Our result is consistent with the literature that has reported important changes in health status for women during the antepartum period.[3, 7, 8] In recent years, studies from several countries have suggested that pregnancy is associated with a remarkable deterioration in HRQoL, especially in the emotional and physical role subscores.[3, 4, 7, 9, 10, 11]

The results of this study demonstrated a significant relationship between QoL and age. Namely, both the average PCS and MCS scores were significantly higher in the middle group. Although studies examining the impact of demographic variables on the QoL for pregnant women are limited, the general opinion is that age has an impact on HRQoL. Otchet et al. determined that pregnancy is associated with significant changes in psychological and physiological health status that persisted into the puerperal period.[12] Similarly, in their study, Asadian et al. found a significant relationship between QoL and age in pregnant women

Table 4. Multivariable regression analysis showing independent variables associated with PCS score as the dependent variable in study population

Variables	B	Standard error	β	t	p
Constant	40.309	1.962		20.543	0.000
Age	-0.136	0.071	-0.153	-1.917	0.046
Occupation	1.732	0.756	0.094	2.292	0.023
Duration of mMarriage	-0.284	0.157	-0.160	-1.809	0.071
Number of individuals at home	-0.067	0.248	-0.012	-0.268	0.789
Planned pregnancy	0.384	0.728	0.025	0.527	0.598
Sharing problems with spouse/relatives	8.508	0.844	0.575	10.083	0.000
Uneasiness within the family	-5.458	0.861	-0.293	-6.338	0.000

PCS: Physical component summary.

Table 5. Multivariable regression analyses showing independent variables associated with MCS score as the dependent variable in study population

Variables	B	Standard error	β	t	p
Constant	32.105	2.632		12.198	0.000
Age	0.131	0.055	0.135	2.398	0.017
Education	0.551	2.512	0.019	0.219	0.827
Occupation	0.105	1.416	0.005	0.074	0.941
Education of spouse	2.454	2.137	0.104	1.148	0.252
Monthly Income	0.001	0.000	0.089	1.232	0.219
Planned pregnancy	2.346	1.051	0.141	2.233	0.026
Sharing problems with spouse/relatives	5.408	1.296	0.335	4.174	0.000
Uneasiness within the family	-2.357	1.318	-0.116	-1.789	0.075

MCS: Mental component summary.

in southern Iran, and determined that there were significant differences in social functioning, bodily pain, vitality, and health problems according to age.[11] Although no difference between the dimensions of physical functioning, emotional problems, general health, and mental health was found between different age groups in their research, in our study group, all of the subscores of the average-aged group were highest, except for physical functioning subscore, which was better in the adolescent group, and no difference in the remaining subscores was found between the adolescent and advanced-age groups.

The MCS scores were lowest in the adolescent group in our study. This result is consistent with the literature.[8, 10, 13, 14] Similarly, in a study conducted in our country aimed to compare QoL scores of pregnant adolescents (<20 years) and adults (20-29 years), Tasdemir et al. determined a significantly lower QoL in pregnant adolescents and associated this result with incomplete physical and mental maturation of the adolescent pregnant women.[8] This finding is not surprising, as both the hormonal influences that make pregnancy an emotional period and the lack of a young mother's control over her feelings due to emotional immaturity create an extra burden for these women. Burke and Liston suggested in their descriptive study that pregnancy may be a negative experience for adolescents because of the increased responsibility and restrictions in their lives, and emphasized the importance of social support provided by the spouse and nurses.[15]

The PCS scores were found to be lowest in the advanced-age age group. Hemingway et al. reported on the negative effect of advanced age on physical functioning during non-pregnancy.[16] This is not surprising, as impairment of physical capacity with advanced age is an important factor in reducing physical functioning. Literature findings show an inverse negative correlation between age and physical functioning.[17, 18] Similar to our results, Li et al. in their study determined that increased age was a significant predictor of lower physical HRQoL.[14] Therefore, it can be said that both the physical changes of pregnancy and the reduction in physical performance increase the physical burden for pregnant women of advanced age.

Consistent with the extant literature, there was a significant association between the ability to share problems with spouse/relatives, not having uneasiness within the family, a planned pregnancy, and higher PCS and MCS scores.[7, 9, 21, 22] There is remarkable evidence in the literature demonstrating the favorable role of social support in the QoL of individuals. Elsenbruch et al. reported that the lack of social support

is an important risk factor affecting maternal well-being in the antepartum period and could lead to adverse pregnancy outcomes.[23] Similar to our results, an association between an unintended pregnancy and a decrease in HRQoL has been well documented. It was demonstrated by Sable et al. that an unplanned pregnancy was significantly associated with reduced social support and family relationship problems.[24] So both reduced social support and the burden of a pregnancy that a woman is not mentally or physically prepared for can affect her psychological well-being and decrease HRQoL.

Our work has several limitations. The relationship between the variables cannot be adequately tested because of the cross-sectional nature of the study. As we don't know the health status of the women prior to pregnancy, it is hard to say if all of the low HRQoL scores were strictly related to pregnancy. Additionally, since the study was carried out with a population that had similar socioeconomic characteristics, it is difficult to generalize the results more broadly. Despite these limitations, our work expands our understanding of maternal health status in different age groups and makes a number of contributions to the literature. To further assess the effect of various factors on the HRQoL of pregnant women, a larger sample and a study that includes the ante- and postpartum period should be performed.

Conclusion

It was concluded that age is an important factor that has a significant affect on the HRQoL scores of pregnant women. Additionally, the findings of this study demonstrated the influence of an unintended pregnancy, the lack of an ability to discuss problems with spouse/relatives, and uneasiness within the family on decreased QoL dimensions throughout pregnancy. It should be kept in mind that a healthy pregnancy process is important in terms of both obstetric and neonatal outcomes. So both healthcare professionals and those closest to pregnant women need to be aware of the importance of both physical and mental factors in maternal well-being, especially in risky groups, such as adolescents and women of advanced age.

Disclosures

Acknowledgements: I am grateful to all of the participating women, and also to Nihan Guneri Dogan, who gave her time to help fill out the questionnaires with the expectant mothers. I also thank Omer Kaplan, who did the statistical analysis, and P. LeMotte, who corrected the English used in this study.

Informed consent: Informed consent was obtained from all individual participants included in the study.

Ethics Committee Approval: All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards.

Peer-review: Externally peer-reviewed.

Conflict of Interest: None declared.

Authorship contributions: Concept – E.Y.; Design – E.Y.; Supervision – E.Y.; Materials – E.Y.; Data collection &/or processing – E.Y.; Analysis and/or interpretation – E.Y.; Literature search – E.Y.; Writing – E.Y.; Critical review – E.Y.

References

1. The World Health Organization Quality of Life assessment (WHOQOL): position paper from the World Health Organization. Soc Sci Med 1995;41:1403–9. [CrossRef]
2. Leplège A, Hunt S. The problem of quality of life in medicine. JAMA 1997;278:47–50. [CrossRef]
3. Haas JS, Jackson RA, Fuentes-Afflick E, Stewart AL, Dean ML, Brawarsky P, et al. Changes in the health status of women during and after pregnancy. J Gen Intern Med 2005;20:45–51.
4. Otchet F, Carey MS, Adam L. General health and psychological symptom status in pregnancy and the puerperium: what is normal? Obstet Gynecol 1999;94:935–41. [CrossRef]
5. Lacasse A, Rey E, Ferreira E, Morin C, Bérard A. Nausea and vomiting of pregnancy: what about quality of life? BJOG 2008;115:1484–93. [CrossRef]
6. Dall'alba V, Callegari-Jacques SM, Krahe C, Bruch JP, Alves BC, Barros SG. Health-related quality of life of pregnant women with heartburn and regurgitation. Arq Gastroenterol 2015;52:100–4. [CrossRef]
7. Ramirez-Velez R. Pregnancy and health-related quality of life: A cross sectional study. Colomb Med. 2011;42: 476–81.
8. Taşdemir S, Balci E, Günay O. Comparison of life quality of pregnant adolescents with that of pregnant adults in Turkey. Ups J Med Sci 2010;115:275–81. [CrossRef]
9. Lau Y, Yin L. Maternal, obstetric variables, perceived stress and health-related quality of life among pregnant women in Macao, China. Midwifery 2011;27:668–73. [CrossRef]
10. Calou CGP, Pinherio AKB, Castro RCMB, de Oliveira, de Souza Aquino P, Antezana FJ. Health Related Quality of Life of Pregnant Women and Associated Factors: An Integrative Review. Health 2014;6:2375–87. [CrossRef]
11. Asadian A, Aghamolaei T, Zare F, Khodarahmi M, Zainali M, Ashough M. Quality of life in pregnant women in Bandar Abbas, South, Iran. J Biol Today's World 2014;3:180–4. [CrossRef]
12. Otchet F, Carey MS, Adam L. General health and psychological symptom status in pregnancy and the puerperium: what is normal? Obstet Gynecol 1999;94:935–41. [CrossRef]
13. Drescher KM, Monga M, Williams P, Promecene-Cook P, Schneider K. Perceived quality of life in pregnant adolescent

girls. Am J Obstet Gynecol 2003;188:1231–3. [CrossRef]
14. Li J, Mao J, Du Y, Morris JL, Gong G, Xiong X. Health-related quality of life among pregnant women with and without depression in Hubei, China. Matern Child Health J 2012;16:1355–63.
15. Burke PJ, Liston WJ. Adolescent mothers' perceptions of social support and the impact of parenting on their lives. Pediatr Nurs 1994;20:593–9.
16. Hemingway H, Nicholson A, Stafford M, Roberts R, Marmot M. The impact of socioeconomic status on health functioning as assessed by the SF-36 questionnaire: the Whitehall II Study. Am J Public Health 1997;87:1484–90. [CrossRef]
17. Fatemeh A, Azam B, Nahid M. Quality of life in pregnant women results of a study from Kashan, Iran. Pak J Med Sci 2010;26:692–7.
18. Zahedi M, Deris F. The quality of life in pregnant women in Farokhshahr city, 2012. Journal of Clinical Nursing and Midwifery 2014;3:63–9.
19. Koçyiğit H, Aydemir Ö, Fişek G, Ölmez N, Memiş A. Kısa form-36'nın Türkçe versiyonunun güvenilirliği ve geçerliliği. İlaç ve Tedavi Dergisi 1999;12:102–6.
20. Demiral Y, Ergor G, Unal B, Semin S, Akvardar Y, Kivircik B, et al. Normative data and discriminative properties of short form 36 (SF-36) in Turkish urban population. BMC Public Health 2006;6:247. [CrossRef]
21. Kershaw T, Murphy A, Divney A, Magriples U, Niccolai L, Gordon D. What's love got to do with it: Relationship functioning and mental and physical quality of life among pregnant adolescent couples. Am J Community Psychol 2013;52:288–301.
22. Shishehgar S, Mahmoodi A, Dolatian M, Mahmoodi Z, Bakhtiary M, Alavi Majd H. The Relationship of Social Support and Quality of Life with the Level of Stress in Pregnant Women Using the PATH Model. Iran Red Crescent Med J 2013;15:560–5.
23. Elsenbruch S, Benson S, Rücke M, Rose M, Dudenhausen J, Pincus-Knackstedt MK, et al. Social support during pregnancy: effects on maternal depressive symptoms, smoking and pregnancy outcome. Hum Reprod 2007;22:869–77. [CrossRef]