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THE EVOLUTION OF MATERNAL WELL-BEING: A JOURNEY THROUGH PREGNANCY'S PHYSIOLOGICAL, PHYSICAL, AND EMOTIONAL REALMS

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Abstract

Pregnancy heralds a transformative journey for women, marked by profound physiological, physical, and emotional changes. While the prospect of pregnancy is generally viewed as exciting and desirable, the concurrent development of discomfort and symptoms can significantly impact women in various domains, guided by the evolving physiological, physical, and emotional landscape (De Haas et al., 2017). These changes intensify over time, exerting substantial effects on pregnant women's physical, mental, and social well-being. Notably, the enlargement of the uterus during pregnancy can impose limitations on movement and induce respiratory challenges due to pressure on the diaphragm (Shagana et al., 2018). Consequently, the health conditions of pregnant women undergo dynamic variations throughout the gestational period. This abstract delves into the multifaceted impact of pregnancy on women's health across the physical, mental, and social dimensions. Recognizing the intricate interplay of physiological, physical, and emotional changes, the narrative underscores the need for comprehensive evaluation by gynecologists, obstetricians, clinicians, and specialists. The assessment should be conducted at distinct trimesters, utilizing diverse evidence, precise measurement tools, and systematic observation methods to capture the nuanced evolution of health conditions throughout pregnancy.

1. Introductıon

During pregnancy, women experience many changes in physiological, physical and emotional areas. Although the occurrence of pregnancy in general is an exciting and desirable event, serious discomfort and symptoms can be observed in different areas depending on the physiological, physical and emotional changes that develop during this period (De Haas et al., 2017).These changes tend to increase over time and significantly affect pregnant

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women in areas such as physical, mental and social. For example, the enlargement of the uterus may cause limitation of movement and respiratory problems due to the pressure it exerts on the diaphragm (Shagana et al., 2018). For this reason, the physical, social and mental health conditions of pregnant women vary throughout the pregnancy period. Gynecologists and obstetricians, clinicians and specialists should evaluate these areas in different trimesters with different evidence, accurate measurement tools and observation methods.

The World Health Organization (WHO) defines quality of life as "people's perception of their life in the context of the culture and value systems in which they live in relation to their goals, expectations and standards" (WHOQOL, 1994). An individual's Health-Related Quality of Life (HRQoL) is an indicator of mental health status, physical and mental well-being, as well as mental and physical behavior (Clark et al., 2011). The SF-36 quality of life scale, developed by Rand Corporation and adapted into Turkish by Koçyiğit et al., is an eightdimensional scale that evaluates health-related quality of life.It has benefited from the general population in its development and adaptation stages, and is widely used to measure health-related quality of life (AbbasiGhahramanloo et al., 2020; Gu et al., 2019; Salaffi et al., 2018).

Determination of health-related quality of life parameters during pregnancy, regulation of necessary health policies and clinical guidelines is an essential factor in analyzing the expenditures that will occur during pregnancy (Schaller et al., 2015). At the same time, the use of period- and population-specific measurement tools is necessary to generate accurate data. The SF-36 quality of life scale, which is frequently used in the measurement of quality of life in the field of health, has been used in various populations and situations (Abbasi-Ghahramanloo et al., 2020; Gu et al., 2019; Salaffi et al., 2018).However, health-related quality of life results of pregnant women in different trimesters and categories could not be reached. The aim of this study; To evaluate the health-related quality of life of pregnant women and how they are affected by different categories. This research can form an idea about improving the quality of life of pregnant women and supporting health policies in the future.

Material and Methods

This research was conducted as a descriptive study to examine health-related quality of life in pregnancy according to different trimesters and categories. The universe of the study consisted of pregnant women who applied to the pregnant outpatient clinic of a training and research hospital in Ankara. The sample size was calculated on the basis of Type I error (significance level) 0.05, Type II error 0.20 (80% power) in the G-power 3.0 program, and it was aimed to reach a total of 150 pregnant women. The research was conducted between April 1, 2021 - August 31, 2021. The data were collected by the researcher by face-to-face interview technique, in a suitable environment in the pregnant outpatient clinic, when the pregnant women were suitable. Filling out the forms took approximately 15 minutes. To research ; Pregnant women who completed the age of 18, volunteered, had no communication problems and were able to read and write were included, while pregnant women who filled in the study form incompletely and wanted to withdraw from the study were not included. For this research, ethics committee approval dated 25.02.2021 and decision number 2021/04 was obtained from the Gülhane Scientific Research Ethics Committee of the University of Health Sciences. The pregnant women included in the study were informed about the purpose and method of the study and their written consent was obtained.

1.1. ***Data collection forms***

The data of the study were obtained by using the introductory information form and the SF-36 health-related quality of life scale.

1.1.1. ***Introductory information form***

It was prepared by the researcher in line with the literature and consisted of questions about the sociodemographic and obstetric characteristics of pregnant women (Dall'Alba et al., 2015; Emmanuel, E., St John, W., & Sun, 2012; Emmanuel, E. N., &Sun, 2014; Moyer et al., 2009; Ngai et al., 2013; Tendais et al., 2011; Vachkova et al., 2013).

1.1.2. ***SF-36 health-related quality of life scale (SF-36)***

The SF-36 health-related quality of life scale, developed by Rand Corporation (1992), is a 36-item scale. The Turkish adaptation of the scale was carried out by Koçyiğit et al. (1999)(Koçyigit, H., Aydemir, O., Olmez, N., & Memis, 1999) .The SF-36 consists of thirty-six items that measure eight dimensions. These; physical function, social function, role limitations due to physical problems, role limitations due to emotional problems, mental health, energy/vitality, pain and general perception of health (Koçyigit, H., Aydemir, O., Olmez, N., & Memis, 1999).Evaluation of the scale differs for each section. The fourth and fifth questions of the scale are evaluated with yes/no, other questions are evaluated with a Likert-type (3,5 and 6 point) grading.The score is calculated by reversing the items 1, 20, 21, 22, 26, 27, 30, 34, 36 of the scale. Total score is not calculated in the scale. Subscales evaluate health between 0-100 points. 0 indicates “poor health” status, 100 indicates “good health” status.The Cronbach's alpha coefficient of the scale was found to be 0.93(Koçyigit, H., Aydemir, O., Olmez, N., & Memis, 1999). In our study, Cronbach's alpha coefficient was found to be 0.83.

1.2. ***Statistical analysis***

Data analysis of the research was done with IBM SPSS V23 program. Number, percentage, median, minimum, maximum, arithmetic mean and standard deviation representations were used for descriptive data. The MannWhitney U test was used to compare the normally distributed scale scores according to the paired groups, and the independent two-sample t-test was used to compare the normally distributed data.Duncan and Scheffe tests were used to compare normally distributed data according to groups of three or more. The Kruska Wallis test was used to compare data that were not normally distributed according to groups of three or more, and multiple comparisons were analyzed with Dunn's test. Analysis results mean ± s. presented as deviation and median (minimum – maximum). Significance level was taken as $p<0.050$.

2. Results

One hundred and fifty pregnant women from different trimesters and characteristics were included in the study.

Table 1. Some Descriptive Characteristics of Pregnants (n=150)

Some Characteristics of Pregnant Women		n	%
Age Group	18-24	40	26,7
	25-31	74	49,3
	32-38	27	18
	39 and up	9	6
Working Status	workless	116	77,3
	public sector	18	12
	private industry	16	10,7
Education	can read and write	2	1,3

	primary education	43	28,7
	high school	60	40
	College and up	45	30
Income status	ıncome less than expenses	18	12
	ıncome equals expense	48	32
	ıncome more than expenses	84	56
Family Type	nuclear family	134	89,3
	extended family	16	10,7
Support for Daily Business	available	65	43,3
	unavailable	85	56,7
Trimester	I. Trimester	24	16
	II. Trimester	54	36
	III. Trimester	72	48
Health Status Detection	bad	3	2
	passable	10	6,7
	middle	30	20
	well	82	54,7
	Very well	25	16,7
Situation That Will Create Risk During Pregnancy	available	55	36,7
	unavailable	95	63,3
Conditions to Create Risk in Previous Pregnancy	available	52	34,7
	unavailable	98	65,3

Table 1 shows the distribution of some characteristics of pregnant women. When we look at Table 1, 49.3% of the pregnant women were between the ages of 25-31, 77.3% were not working, 40% were high school graduates, 56% ıncome more than expenses, 89.3% were core children. Family structure, 56.7% do not have support providers in daily work, 48% are in the third trimester, 54.7% describe their health status as good, 63.3% are not in a situation that will pose a risk in their current pregnancies, and It was concluded that 65.3% of them were not in a situation that would pose a risk in their previous pregnancies.

Table 2. Some Main Features of the Study (n=150)

	I. Trimester	II. Trimester	III. Trimester	Total	Test Statistics	p
	Mean± SD	Mean± SD	Mean± SD	Mean± SD		
Age	29,4 ± 4,2	28,4 ± 5,7	28,1 ± 5,5	28,4 ± 5,4	0,515	0,598
BMI	25,8 ± 2,6b	29,6 ± 4,8a	29,5 ± 4,2a	28,9 ± 4,4	14,949	**<0,001**
Parite	2,3 ± 1,2	2,1 ± 1,2	2,1 ± 1,2	2,1 ± 1,2	0,539	0,584

a-b: There is no difference between groups with the same letter.

Some basic features of the study are examined in Table 2. When the age, body mass index (BMI) and parity status of the pregnant women are examined according to the trimesters; The mean age was 29.4 ± 4.2 in the first trimester, 28.4 ± 5.7 in the second trimester, and 28.1 ± 5.5 in the third trimester. When we look at the parity distribution of the pregnant women according to the trimesters, it was determined as 2.3 ± 1.2 in the first trimester, 2.1 ± 1.2 in the second trimester and 2.1 ± 1.2 in the third trimester. When we look at the distribution of body mass index averages of pregnant women according to trimesters, it was determined as 25.8 ± 2.6 in the first trimester, 29.6 ± 4.8 in the second trimester and 29.5 ± 4.2 in the third trimester.A statistically significant difference was found between the mean values of body mass index according to trimester ($p<0.001$). This difference is due to the difference between the first trimester body mass index and other groups. There was no statistically significant difference between the mean age and parity values according to trimesters.

Table 3. Comparison of Health-Related Quality of Life Sub-Dimension Scores According to Some Categorical Variables during Pregnancy

	Physical Function	Role limitationPhysical	Role limitationEmotional	Vitality	Mental health	Social functioning	Pain	General health perceptions
Trimester								
I. Trimester	57,9 ± 24,4	37,5 (0 - 75)	33,3 (0 - 100)	45,8 ± 20,1	54,8 ± 15,9	60,9 ± 20	55,8 ± 23,5	60 ± 18,1

	II. Trimester	56,9 ± 23,4	30 (0 - 75)	33,3 (0 - 100)	49 ± 21,4	63,3 ± 21,2	62,3 ± 22,5	46,3 ± 26,4	61,1 ± 20,1
	III. Trimester	54,9 ± 20,8	25 (0 - 75)	33,3 (0 - 100)	48,1 ± 20,6	57,5 ± 20,3	60,2 ± 20,6	46,7 ± 22,9	60,2 ± 15,6
	Test statistic	F=0,229	χ2=0,819	χ2=0,092	F=0,190	F=1,984	F=0,142	F=1,472	F=0,051
	p	0,796	0,664	0,955	0,827	0,141	0,868	0,233	0,950
BMI-Classification									
	Obese	55,7 ± 23,3	25 (0 - 75)	33,3 (0 - 100)	50 (5 - 100)	57,4 ± 18,2	62,5 (25 - 100)	42,5 ± 24,7	60 (20 - 100)
	not obese	56,4 ± 21,6	37,5 (0 - 75)	33,3 (0 - 100)	45 (5 - 95)	60,4 ± 21,4	62,5 (0 - 100)	51,9 ± 23,5	60 (15 - 95)
	Test statistic	t=0,173	U= 2,665	U= 2,405	U= 2,347	t=0,895	U= 2,399	t=2,364	U= 2,416
	p	0,863	0,804	0,204	0,144	0,372	0,202	**0,019**	0,233
General Health									
	bad	30 (5 - 85)^{a}	50 (25 - 75)^{ab}	100 (33 - 100)^{ab}	45 (30 - 85)^{abc}	60 (56 - 80)^{ab}	87,5 (75 - 88)^{a}	58 (0 - 68)^{ab}	50 (30 - 80)^{abc}
	passable	47,5 (20 - 95)^{b}	12,5 (0 - 75)^{ab}	16,5 (0 - 100)^{ab}	42,5 (20 - 60)^{a}	56 (32 - 80)^{ab}	62,5 (38 - 100)^{ab}	45 (0 - 68)^{ab}	47,5 (20 - 60)^{ab}
	middle	47,5 (15 - 85)^{b}	25 (0 - 75)^{a}	33,3 (0 - 100)^{a}	37,5 (5 - 75)^{ab}	56 (16 - 92)^{a}	50 (0 - 88)^{b}	36,3 (0 - 100)^{a}	45 (15 - 75)^{a}
	well	55 (10 - 100)^{b}	37,5 (0 - 75)^{ab}	33,3 (0 - 100)^{ab}	47,5 (5 - 100)^{b}	56 (12 - 100)^{a}	62,5 (13 - 100)^{ab}	45 (0 - 100)^{a}	60 (35 - 100)^{b}
	Very well	65 (15 - 100)^{b}	50 (0 - 75)^{b}	66,7 (0 - 100)^{b}	65 (30 - 95)^{c}	76 (40 - 100)^{b}	75 (38 - 100)^{a}	65 (33 - 100)^{b}	85 (45 - 95)^{c}
	Test statistic	χ 2=8,728	χ2=11,232	χ2=10,542	χ 2=29,888	χ 2=15,971	χ2=19,238	χ 2=16,394	χ2=47,508
	p	**0,033**	**0,011**	**0,014**	**<0,001**	**0,001**	**<0,001**	**0,001**	**<0,001**
Complaining Stattus									
available		50 (5 - 100)	25 (0 - 75)	33,3 (0 - 100)	45 (5 - 100)	56 (12 - 100)	56,3 (0 - 100)	45 (0 - 100)	60 (15 - 100)
unavailable		70 (20 - 100)	50 (0 - 75)	66,7 (0 - 100)	55 (10 - 100)	64 (40 - 100)	75 (38 - 100)	57,5 (0 - 100)	70 (35 - 95)
	Test statistic	U= 1,227	U= 1,333	U= 1,216	U= 1,329	U= 1,287	U= 1,136	U= 1,382	U= 1,269

p	**0,001**	**0,003**	**<0,001**	**0,004**	**0,002**	**<0,001**	**0,008**	**0,002**
Income status								
ıncome less than expenses	47,8 ± 17,1	30 (0 - 75)[a]	33,3 (0 - 100)[a]	37,5 (5 - 70)[a]	51,1 ± 22,5[a]	56,3 (13 - 88)[a]	22,5 (0 - 68)[a]	55,8 ± 12,9
ıncome equals expense	54,1 ± 20,7	25 (0 - 75)[a]	33,2 (0 - 100)[a]	40 (10 - 85)[a]	52,4 ± 17,7[a]	56,3 (0 - 100)[a]	45 (0 - 100)[b]	54,5 ± 14,9
ıncome more than expenses	59,1 ± 23,6	50 (0 - 75)[b]	66,7 (0 - 100)[b]	55 (5 - 100)[b]	64,8 ± 19,4[b]	62,5 (13 - 100)[b]	51,3 (0 - 100)[ab]	64,9 ± 18,8
Test statistic	F=2,241	χ2=6,047	χ2=19,981	χ2=17,165	F=8,080	χ2=5,048	χ2=15,534	F=6,875
p	0,110	**0,049**	**<0,001**	**<0,001**	**<0,001**	**0,039**	**<0,001**	**0,002**

F: Analysis of variance test statistic, χ2: Kruskal Wallis test statistic, U: Mann-Whitney U test statistic, t: Two independent samples t test statistic, a-c: No difference between groups with the same letter, Notation: Mean ± s. deviation, median (minimum maximum)

In Table 3, a comparison of the sub-dimensions of the SF-36 quality of life scale according to some categorical variables is given (Trimester, BMI-classification, General health status, Complaints status, Income perception status).There was no statistically significant difference between the mean or median scores of SF-36 subdimensions according to trimesters (p>0.050). Pain score mean values differ according to BMI groups (p=0.019).

The highest mean score of 51.9 was obtained from those who were not obese, while the lowest mean score of 42.5 was obtained from those who were obese. The median values of Physical Function scores differ according to the general health status groups (p= 0.033). The highest score was obtained from those who expressed the median as 50 very well, while the lowest score was obtained from those who expressed a median of 12.5 not bad. The median scores for Role limitation-Physical differ according to the general health status groups (p= 0.011). The highest score was obtained from those who expressed the median 65 very well, while the lowest score was obtained from those who expressed the median poorly as 30. Median values of Vitality scores differ according to general health status groups (p<0.001). The highest score was obtained from those who expressed the median as 65 very well, while the lowest score was obtained from those who expressed the median as moderate as 37.5.Median mental health scores differ according to general health status groups (p=0.001). The highest median score of 76 was obtained from those who expressed very well, while the lowest median score of 56 was obtained from those who expressed not bad, but moderately and well. Social Functioning by general health status groupsthe median scores differ (p<0.001). The highest score median was obtained from those who expressed poorly as 87.5, while the lowest score was obtained from those who expressed a moderate median of 50. Median pain scores differ according to general health status groups (p=0.001). While the highest score was obtained from those who expressed the median very well as 65, the lowest score was obtained from those who expressed the median as 36.3 moderately. The median values of the General Health Perception score differ according to the general health status groups (p<0.001). The highest score was obtained from those who expressed the median as 85 very well,

while the lowest score was obtained from those who expressed the median of 45 as moderate.According to the groups of experiencing complaints; Physical Function (p=0.001), Role limitationPhysical (p=0.003), Rolelimitation-Emotional (p<0.001) Vitality (p=0.004), Mental Health (p=0.002), Social Functioning (p<0.001),Pain (p=0.008), General Health Perception (p=0.002) differ between the median scores. Median score of Role limitation-Physical (p=0.049), Role limitation-Emotional (p<0.001), Vitality (p<0.001), Social Functioning (p<0.001), Pain (p=0.039) according to income perception status groups differ between values. According to income perception status groups, it differs between the mean scores of Mental Health (p<0.001) and General Health Perception (p=0.002).

3. Discussion

In our study, the SF-36 quality of life scale, which is one of the health-related quality of life measurement tools, was used. When we look at the studies using quality of life scales in the field of health according to trimesters, it has been concluded that the quality of life scores in many sub-dimensions gradually decrease with the progress of the gestational week (Abbaszadeh & Mehran, 2010; Da Costa et al., 2010; Hama, K., Takamura, N., Honda, S., Abe, Y., Yagura, C., Miyamura & Aoyagi, 2008; Kazemi et al., 2017; Ramírez-Vélez, 2011; Vinturache et al., 2015).However, in our study, contrary to the literature, there was no statistical difference between the mean or median scores of SF-36 sub-dimensions of Physical Function, Role limitation-Physical, Role limitation-Emotional, Vitality, Mental Health, Social Functioning, Pain and General Health Perception during pregnancy according to Trimesters. There was no significant difference (p>0.050).This may be due to the fact that the validity of the SF36 quality of life scale was not validated with the pregnant sample group that appealed to the general population. In our study, mean scores of Pain differed according to BMI groups (p=0.019). While the highest mean score of 51.9 was obtained from the non-obese, the lowest mean score of 42.5 was obtained from the obese. According to a study, obese pregnant women scored lower on sub-dimensions such as Physical Function, Role limitationPhysical, and Pain compared to non-obese pregnant women (Vinturache et al., 2015).Although this research supports our study, it reveals the effect of weight gain during pregnancy on the physical area. Statistical differences were found between the SF-36 sub-dimension score median values according to the general health perception groups (Table 3). In a study in which the general satisfaction status of the pregnant was questioned, the mean scores of mental health and general health perception of pregnant women who were satisfied with the pregnancy process were high (Wang et al., 2013). According to the groups of experiencing complaints; Physical Function (p=0.001), Role limitation-Physical(p=0.003), Role limitation-Emotional (p<0.001), Vitality (p=0.004), Mental Health (p=0.002), Social Functioning (p<0.001), Pain (p=0.008), General Health Perception (p=0.002) mean scores were statistically significant differences.In a study investigating the effects of complaints such as nausea and vomiting during pregnancy on the quality of life, it was concluded that the presence of these complaints during pregnancy affects all dimensions of the quality of life measurement (Chan et al., 2010). There was also a study that reported that experiencing complaints during pregnancy affects physical and social functionality sub-dimensions (Da Costa et al., 2010). In a study examining gastrointestinal system complaints such as epigastric pain and reflux, significant decreases were obtained in many sub-dimensions of quality of life (Dall'Alba et al., 2015). In some studies investigating the effects of complaints such as back pain during pregnancy on the quality of life; While results were reported that back pain affects dimensions such as pain and physical function (Olsson & Lena, 2009), a different study found that back pain did not affect quality of life (Çoban, A., Arslan, GG, Çolakfakioglu, A., &
Sirlan, 2010).). Therefore, it can be deduced that in studies conducted with sample groups of different gestational periods, complaints during pregnancy may affect the quality of life in different dimensions. Median score of Role limitation-Physical(p=0.049), Role limitation-Emotional (p<0.001), Vitality (p<0.001), Social Functioning

(p<0.001), Pain (p=0.039) according to income perception status groups differ between values. According to income perception status groups, it differs between the mean scores of Mental Health (p<0.001) and General Health Perception (p=0.002). When we look at the studies examining the effect of income status on the quality of life, it was found that the physical role, general health, social functionality, emotional role and mental health scores of pregnant women who reported high income level were high (Ramírez-Vélez, 2011), and in another study, income status, Role limitation-Physical, general health It has been concluded that it is associated with subdimensions such as social function, Role limitation- Emotional and mental health (Da Costa et al., 2010). As a result, it can be said in line with the data obtained from countries with different levels of development; Income status is an important indicator of quality of life. Results in this direction were also obtained in our study.

4. Declarations of competing interest

The authors declare no conflict of interests.

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