

# Effects of Physiological Skin Changes on Quality of Life During Pregnancy

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## Abstract

**Background:** The skin has an important role in social relations and social adaptation. For this reason, dermatological complaints can adversely affect the pregnant' mental and social well-being leading to deterioration in the quality of life.

**Aim:** This analytical cross-sectional study was conducted to evaluate the effects of physiological skin changes on the quality of life during pregnancy.

**Methods:** The study sample consisted of 350 pregnant women who were interviewed face-to-face in the obstetrics and gynecology department of a research and training hospital. Data were collected using a questionnaire consisting of questions on sociodemographic and obstetric characteristics, Physiological Skin Changes Questionnaire Form, and SF-36 Quality of Life Scale. Mann-Whitney *U* test was used to analyze the data.

**Results:** The most common physiological skin changes experienced by pregnant women were found to be melasma (87.4%), linea nigra (83.1%), striae gravidarum (72.6%), and gingival changes (67.7%), respectively. According to Short Form-36 subscale scores, there was a significant difference in energy/vitality (varicose veins,  $P = .002$ ; androgenetic alopecia,  $P = .002$ ; mental health linea nigra,  $P = .006$ ; and androgenetic alopecia,  $P = .031$ ), physical functioning (striae gravidarum,  $P = .023$ ;  $P = .042$ ; and hirsutism,  $P = .024$ ), and bodily pain (melisma,  $P = 0.028$ ; linea nigra,  $P = .016$ ; and androgenetic alopecia,  $P = .000$ ), while the total quality of life did not differ significantly according to skin changes.

**Conclusion:** Physiological skin changes did not affect the general quality of life but significantly affected some subscale of the quality of life of pregnant women with striae gravidarum, pruritus, varicose veins, hirsutism, and androgenetic alopecia. It is recommended that pregnant women should be given care and training to prevent physiological skin changes and reduce their severity.

**Keywords:** Pregnancy, physiological skin changes, quality of life

## Introduction

Pregnancy is a complex process with physical, mental, and social consequences in which many expected physiological changes that affect the systems in the female body occur.<sup>1</sup> Many problems are experienced during pregnancy due to physiological and anatomical changes.<sup>2,3</sup> Due to these complaints, pregnant women may experience physical, mental, and social disorders,<sup>3</sup> so their quality of life is adversely affected.<sup>3,4</sup> It has been reported that these complaints which include sleep problems,<sup>5,6</sup> changes in sexual life,<sup>4</sup> constipation,<sup>5,7</sup> anemia,<sup>8</sup> fatigue,<sup>5</sup> nausea, vomiting,<sup>5,9</sup> lower back pain,<sup>10</sup> urinary incontinence,<sup>11</sup> psychological problems<sup>5</sup> and striae, and skin changes such as increased pigmentation<sup>12</sup> have a negative impact on the quality of life.

In the skin, which is one of the systems affected by normal physiological changes during pregnancy, various physiological or pathological changes occur due to immunological, metabolic, endocrine, and vascular changes.<sup>1,13</sup> Skin changes in pregnancy are classified into 3 groups as physiological changes, non-specific dermatoses, and pregnancy-specific dermatoses.<sup>1-3,10,13-15</sup> Physiological skin changes are common and quite prevalent in pregnant women.<sup>14,16</sup> One of the common physiological skin changes is striae gravidarum, which consists of pink-purple atrophic linear scars on the abdomen, hips, thighs, breasts, and arms. Another common physiological skin change is the melasma and linea nigra, which occur due to hyperpigmentation. In addition, as a result of the physiological changes, vascular changes such as increased hair growth, white spots on nails, varicose veins, spider angioma, and gingival changes occur during pregnancy.<sup>13,15,17</sup>

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The skin has an important role in social relations and social adaptation. For this reason, dermatological complaints can adversely affect the individuals' mental and social well-being and daily life, leading to deterioration in the quality of life.<sup>18</sup> Although the individuals' symptoms are not visible, they may limit their social life based on the fear of interaction with the environment.<sup>12</sup> As in many other physiological changes experienced during pregnancy, skin changes cause women to have anxiety and affect their quality of life negatively.<sup>19,20</sup> In studies conducted on pregnant women, it was reported that the occurrence and severity of striae gravidarum affects the dermatology-specific quality of life and also reduces the quality of life in the postpartum period. It is extremely important to assess skin problems and the effects they have on pregnant women in routine follow-ups. However, studies examining the effects of physiological skin changes during pregnancy on quality of life are limited. In addition, it has been reported that women do not have enough information about skin changes that are common during pregnancy<sup>22</sup> and that health professionals do not provide sufficient information to pregnant women about the changing body.<sup>23</sup>

### Research Questions

- What are the physiological skin changes experienced during pregnancy?
- How is the quality of life of pregnant women?
- What is the effect of physiological skin changes on the quality of life of pregnant women?

### Method

The research was conducted as a descriptive study.

#### Population and Sample of the Research

The research sample consisted of 350 pregnant women who applied to the obstetrics and gynecology outpatient clinics of a training and research hospital between April and June 2019 and were selected by random sampling method in accordance with the inclusion and exclusion criteria of the study. The number of samples to represent the population was determined by the sample size formula, where the number of people in the population was unknown while the incidence of the cases was known. In determining the sample number, 5% margin of error, 95% reliability, and the incidence of skin changes in pregnant women were accepted as 71%<sup>24</sup> and determined as 322. Considering the potential losses that may occur during the research, 350 pregnant women were included in the study.

Pregnant women aged 18-45 years, in the second and third trimesters, with a single and healthy fetus and literate in Turkish were included in the study. The exclusion criteria included those with multiple pregnancies, a diagnosis of risky pregnancy, adolescent pregnancies, pre-pregnancy, pregnancy dermatosis, chronic disease, vision, hearing, and psychiatric diagnoses.

#### Data Collection Tools

The data of the research were collected by the researcher using face-to-face interview technique. Pregnant Information Form, Skin Changes Questionnaire, and SF-36 Quality of Life Scale were used as data collection tools in the study.

#### Pregnant Information Form

This form consists of 14 multiple-choice and open-ended questions inquiring the socio-demographic characteristics and obstetric history

of pregnant women.<sup>1,13,17</sup> Sociodemographic characteristics such as age, educational level, employment status, family type, obstetric characteristics, weight gained during pregnancy, previous pregnancy status, planned pregnancy status, and diseases experienced during pregnancy were questioned.

#### Skin Changes Questionnaire

It is a form consisting of 12 questions prepared in line with the literature.<sup>1,13-15,17,25-28</sup> In the form, skin changes during pregnancy and striae gravidarum, melasma, linea nigra, spider angioma, palmar erythema, varicose veins, acrochordon, changes in nevi, hirsutism, androgenetic alopecia, gingival changes, and pruritus were questioned.

#### Quality of Life Scale-Short Form-36

The Short Form (SF-36) Quality of Life Scale was developed by Ware and Sherbourne<sup>29</sup> in 1987 for use in clinical practice and research, health policy evaluations, and general population surveys. It is one of the most widely used scales for general assessment of quality of life. It is a multi-title self-report scale that includes 36 items assessing 3 major health domains (functional status, well-being, and general health) and 8 health concepts including physical functioning, social functioning, physical role, emotional role, mental health, vitality-fatigue, bodily pain, general health, and changes in health. All the items in the scale are evaluated considering the last 4 weeks. Furthermore, the second item also questions the changes in health status compared to the previous year. This item is not taken into account in the evaluation of the scale. The lowest score that can be obtained from the scale is 0 while the highest score is 100, and it is thought that the quality of life increases as the score increases. In Pinar's<sup>30</sup> study, the test-retest value of the SF-36 Quality of Life Scale was reported to be 0.94 and the Cronbach's alpha value for its internal consistency was found as 0.92. In the study, the Cronbach's alpha coefficient of the scale was found to be 0.77.

#### Data Collection

In the study, the data were collected from the pregnant women who applied to the outpatient clinic for normal follow-up through face-to-face interview in the examination room using data collection tools. In the Skin Changes Questionnaire, the pregnant women were first asked if there were any skin changes after pregnancy, and the pictures demonstrating the physiological skin changes were shown to the pregnant women who responded positively. The pregnant women were asked to indicate the changes they identified in the pictures. At the same time, skin changes stated by the pregnant women were evaluated by the researcher through inspection.

#### Ethical Considerations

The research was conducted in line with scientific and universal ethical principles. For this purpose, the pregnant women included in the study were informed about the research subject and purpose and the fact that they could freely decide to participate in the study and terminate it at any time. Written informed consent was obtained from the participants as well as the researchers who conducted the Turkish adaptation of the SF-36 Quality of Life Scale and the training and research hospital where the study was conducted, date: March 25, 2019, and number: 16867222-604.01.01 and the ethics committee: 04/12/2018 and Nr: A-48.

### Data Analysis

International Business Machines Statistical Package for the Social Sciences 24 software was used in the analysis of the data obtained in the study. Socio-demographic characteristics of pregnant women were evaluated using frequency and percentage, SF-36 scale score, arithmetic mean, standard deviation, and minimum and maximum values. Cronbach's alpha was used in the reliability analysis of the SF-36. Normality assessment of the data was made with the Kolmogorov-Smirnov statistical test, and it was found that it did not show normal distribution. Mann-Whitney *U* test was used in pairwise comparisons of nonparametric tests, since it did not show a normal distribution. Significance levels in difference and relationships were accepted to be  $P < .05$ .

### Results

It was determined that the mean age of the pregnant women was  $28.07 \pm 5.46$  years, the mean weight before pregnancy was  $65.15 \pm 13.71$  kg, the mean weight at the time of participation in the study was  $77.46 \pm 13.40$  kg, and the mean weight gained during pregnancy was  $12.43 \pm 6.52$  kg. Of the pregnant women, 33.4% ( $n=117$ ) were aged between 21 and 25 years, 38.3% ( $n=134$ ) were primary school graduates, 84.3% ( $n=295$ ) were not employed, 32.3% ( $n=113$ ) were primipara, 78.9% ( $n=276$ ) of them had a planned pregnancy, and 59.7% ( $n=209$ ) of them regularly used medication during pregnancy (Table 1).

When the distribution of physiological skin findings observed in pregnant women within the scope of the study is examined, it was found that the most common first-line physiological skin change was melasma, and it was observed in 87.4% ( $n=306$ ) of the pregnant women. Other physiological skin changes observed in pregnant women were linea nigra (83.1%), striae gravidarum (72.6%), gingival changes (67.7%), pruritus (60.6%), varicose veins (29.1%), and hirsutism (24.3%). The least observed skin change was palmer erythema (0.6%). Melasma was not observed in 12.62% ( $n=44$ ) of the pregnant women, and palmar erythema was not observed in 99.4% ( $n=348$ ) (Table 2).

The mean scores the pregnant women obtained from the SF-36 Quality of Life Scale in terms of physical functioning, physical role, emotional role, energy/vitality, mental health, social functioning, bodily pain, and general health perception were found to be  $47.00 \pm 13.01$ ,  $33.29 \pm 37.55$ ,  $67.71 \pm 41.79$ ,  $48.81 \pm 9.73$ ,  $63.73 \pm 7.74$ ,  $55.46 \pm 21.05$ ,  $55.60 \pm 24.75$ , and  $69.97 \pm 14.08$ , respectively. The SF-36 total scale mean score was  $55.20 \pm 11.80$  (Table 3).

When the SF-36 total mean score was according to the condition of having melasma, linea nigra, striae gravidarum, pruritus, varicose veins, hirsutism, and androgenetic alopecia, no significant difference was found ( $P > .05$ ) (Table 4).

It was determined that the mean SF-36 energy/vitality sub-scale score in pregnant women demonstrated a statistically significant difference according to the condition of having varicose veins ( $z = -3.147$ ,  $P = .002$ ) and androgenetic alopecia ( $z = -3.071$ ,  $P = .002$ ). It was determined that the vitality/energy score of the pregnant women without varicose veins ( $49.86 \pm 9.72$ ) was higher than those with the condition ( $46.27 \pm 9.33$ ). Conversely, the pregnant women with androgenetic alopecia had a higher energy/vitality score ( $53.27 \pm 6.62$ ) than that of those without the problem ( $48.46 \pm 9.86$ ) (Table 4).

**Table 1. Distribution of Skin Changes According to Socio-Demographic and Obstetric Characteristics (N=350)**

Socio-Demographic Characteristics	Mean $\pm$ SD/Median	Min-Max
<b>Age</b>	$28.07 \pm 5.46/27.50$	18-41
<b>Weight</b>		
Weight before pregnancy, kg	$65.15 \pm 13.71/64$	42-124
Weight at pregnancy, kg	$77.46 \pm 13.40/76$	50-130
Weight gained, kg	$12.43 \pm 6.52/12$	0-43
<b>Age</b>	<b>n</b>	<b>%</b>
18-20	19	5.4
21-25	117	33.4
26-30	100	28.6
31-35	78	22.3
36 vs. 45	36	10.3
<b>Educational level</b>		
Primary school	134	38.3
Secondary school	177	50.6
University	39	11.1
<b>Employment status</b>		
Yes	55	15.7
No	295	84.3
<b>Obstetric characteristics</b>	<b>N</b>	<b>%</b>
<b>Number of pregnancies</b>		
Primipara	113	32.3
Multipara	237	67.7
<b>Pregnancy plan</b>		
Planned	276	78.9
Unplanned	74	21.1
<b>Regularly used medication</b>		
Yes	209	59.7
No	141	40.3

SD, standard deviation.

It was determined that the mean scores of SF-36 mental health subscales showed a statistically significant difference according to the condition of having linea nigra ( $z = -2.746$ ,  $P = .006$ ) and androgenetic alopecia ( $z = -2.155$ ,  $P = .031$ ). Mental health subscale mean scores were found to be higher in pregnant women with androgenetic alopecia ( $66.46 \pm 5.32$ ) than in those without ( $63.51 \pm 7.87$ ) and in pregnant women without linea nigra ( $65.76 \pm 7.36$ ) than in those with the condition ( $63.31 \pm 7.76$ ) (Table 4).

When the SF-36 social functioning mean scores were analyzed, it was seen that there was a statistically significant difference according to the condition of having striae gravidarum ( $z = -2.275$ ,  $P = .023$ ), pruritus ( $z = -2.043$ ,  $P = .042$ ), and hirsutism ( $z = -2.253$ ,  $P = .024$ ) and that the

**Table 2. Distribution of Skin Changes Observed During Pregnancy (N=350\*)**

	n (%)	
	Yes	No
Melasma	306 (87.4)	44 (12.6)
Linea nigra	291 (83.1)	59 (16.9)
Striae gravidarum	254 (72.6)	96 (27.4)
Gingival changes	237 (67.7)	113 (32.3)
Pruritus	212 (60.6)	138 (39.4)
Varicose veins	102 (29.1)	248 (70.9)
Hirsutism	85 (24.3)	265 (75.7)
Androgenetic alopecia	26 (7.4)	342 (92.6)
Spider angioma	4 (1.1)	346 (98.9)
Acrochordon	4 (1.1)	346 (98.9)
Changes in nevi	3 (0.9)	347 (99.1)
Palmar erythema	2 (0.6)	348 (99.4)

\*Since some participants experienced more than 1 skin change, n increased exponentially.

pregnant women who did not have striae gravidarum ( $59.77 \pm 22.88$ ), pruritis ( $58.33 \pm 22.32$ ), and hirsutism ( $56.98 \pm 20.46$ ) had higher social functioning mean scores than those with the condition (striae gravidarum:  $53.84 \pm 20.13$ , pruritus:  $53.60 \pm 20.02$ , hirsutism:  $50.74 \pm 22.27$ ) (Table 4).

The SF-36 bodily pain sub-scale mean scores demonstrated a statistically significant difference according to the condition of having melasma ( $z = -2.198, P = .028$ ), linea nigra ( $z = -2.410, P = .016$ ), and androgenetic alopecia ( $z = -3.578, P = .000$ ). It was determined that the bodily pain scores of the pregnant women without androgenetic alopecia ( $56.98 \pm 24.46$ ) and melasma ( $56.70 \pm 24.63$ ) were significantly higher than those with the condition (Androgenetic alopecia:  $38.46 \pm 22.22$ , melasma:  $47.95 \pm 24.55$ ). Similarly, the pregnant women with linea nigra ( $57.15 \pm 24.60$ ) had significantly

**Table 3. SF-36 Sub-Scale Scores**

SF-36 and Sub-Scales	Mean $\pm$ SD	Min-Max
Physical functioning	47.00 $\pm$ 13.01	15-90
Role-physical	33.29 $\pm$ 37.55	0-100
Role-emotional	67.71 $\pm$ 41.79	0-100
Energy/vitality	48.81 $\pm$ 9.73	20-90
Mental health	63.73 $\pm$ 7.74	28-84
Social functioning	55.46 $\pm$ 21.05	0-100
Bodily pain	55.60 $\pm$ 24.75	0-90
General health	69.97 $\pm$ 14.08	20-100
<b>Total</b>	55.20 $\pm$ 11.80	23.69-93.00

higher bodily pain scores compared to those without the condition ( $47.97 \pm 24.27$ ) (Table 4).

### Discussion

Due to the normal physiological and complex changes in pregnancy, changes in the skin can generally be observed in the vast majority of pregnant women.<sup>3,14,31</sup> In the study, the most frequently observed physiological skin changes were melasma, linea nigra, striae gravidarum, and gingival changes. In the previously conducted studies, it was reported that the frequency of melasma was 15.8%-64.14%,<sup>14,17,22,32</sup> the frequency of the linea nigra was 54.75%-89.2%,<sup>14,32,33</sup> the frequency of striae gravidarum was 46.96%-60%,<sup>14,17,33</sup> and the frequency of gingival changes was 43%.<sup>17</sup> Physiological skin changes ranked in the first 4 places in the study are similar to the findings in the literature; however, the rates are higher than those reported in the previous studies. In the current study, pregnant women in the second and third trimesters were included in the sample. The effect of physiological and anatomical changes increases in the advanced pregnancy period. It could be argued that the sample in our study was effective in determining the physiological skin change rates which were higher than those reported in the literature.

Physical functioning, "physical role difficulty," and "energy/vitality" sub-scale mean scores of the SF-36 scale for pregnant women were the lowest while "Emotional Role," "Mental Health," and "General Health Perception" sub-scale mean scores received the highest scores compared to the other sub-scales. It was seen that the quality of life of pregnant women was negatively affected in terms of "physical functioning," "physical role," and "energy/vitality" due to the limitations they experience in performing their daily life activities. Furthermore, it was observed that the SF-36 sub-scale scores of pregnant women were lower when compared to the norm SF-36 sub-scale values of women in Turkish society.<sup>34</sup> In addition, studies have reported that the quality of life of pregnant women is affected by the disorders experienced due to physiological and anatomical changes during pregnancy.<sup>5-9,11,31,35,36</sup>

While it was determined that the mental health of the pregnant women with linea nigra, the social functioning of the pregnant women with striae gravidarum, pruritis, hirsutism, and the energy/vitality of the pregnant women with varicose veins were lower than the pregnant women without these skin changes, and it was observed that the total quality of life was not affected by the skin changes. These results may be attributed to the fact that physical limitations are not a life-threatening problem although physiological skin problems affect the physical appearance of pregnant women.

In this study, it was found that individuals without melasma had a poorer quality of life in the SF-36 bodily pain sub-scale and that their daily lives were affected more compared to the pregnant women who did not suffer from the condition. It is known that melasma, which is common during pregnancy, causes psychosocial and emotional problems since it has a significant impact on the physical appearance, especially the face, of the individual, thus affecting the quality of life.<sup>25</sup> Mothers with melasma have reported that the skin appearance affects their lives, causing them to feel shame.<sup>22</sup> However, studies investigating the relationship between melasma and pain could not be found.

It was found that the mental health of the pregnant women with linea nigra was poor compared to the pregnant women who did not have

Table 4. Distribution of SF-36 Total and Sub-Scale Scores According to Physiological Skin Changes

SF-36 and Sub-Scales	Physical Functioning	Role-Physical	Role-Emotional	Energy/Vitality	Mental Health	Social Functioning	Bodily Pain **	General Health	Total
<b>Physiological skin changes</b>									
<b>Melasma</b>	No n=44	49.55 ± 15.66	59.85 ± 46.91	49.77 ± 13.29	64.55 ± 11.59	52.56 ± 26.63	56.70 ± 24.63	71.48 ± 15.42	53.87 ± 14.91
	Yes n=306	46.63 ± 12.57	33.01 ± 36.90	68.85 ± 40.97	48.68 ± 9.12	63.61 ± 7.03	47.95 ± 24.55	69.75 ± 13.89	55.39 ± 11.30
	Test P*	z = -1.270 P = .204	z = -0.089 P = .929	z = -0.961 P = .336	z = -1.296 P = .195	z = -0.657 P = .511	<b>z = -2.198</b> <b>P = .028</b>	z = -0.578 P = .563	z = -0.980 P = .327
<b>Linea nigra</b>	No n=59	47.46 ± 13.31	34.75 ± 41.27	60.45 ± 46.93	50.25 ± 9.58	57.42 ± 21.67	47.97 ± 24.27	71.53 ± 14.15	54.45 ± 12.94
	Yes n=291	46.91 ± 12.97	32.99 ± 36.83	69.19 ± 40.61	48.52 ± 9.75	63.31 ± 7.76	57.15 ± 24.60	69.66 ± 14.07	55.35 ± 11.57
	Test P	z = -0.038 P = .969	z = -0.077 P = .938	z = -0.906 P = .365	z = -1.451 P = .147	<b>z = -2.746</b> <b>P = .006</b>	<b>z = -2.410</b> <b>P = .016</b>	z = -1.180 P = .238	z = -0.758 P = .449
<b>Stria gravidarum</b>	No n=96	46.51 ± 14.27	33.07 ± 38.13	66.32 ± 43.12	48.80 ± 11.53	63.92 ± 8.31	55.94 ± 24.17	69.64 ± 13.20	55.50 ± 13.04
	Yes n=254	47.19 ± 12.52	33.37 ± 37.41	68.24 ± 41.36	48.82 ± 8.98	63.65 ± 7.53	55.47 ± 25.01	70.10 ± 14.42	55.08 ± 11.32
	Test P	z = -0.468 P = .640	z = -0.088 P = .930	z = -0.212 P = .832	z = -0.516 P = .606	z = -0.425 P = .671	z = -0.211 P = .833	z = -0.772 P = .440	z = -0.265 P = .791
<b>Gingival changes</b>	No n=113	48.32 ± 13.24	36.28 ± 9.95	65.78 ± 44.20	49.47 ± 11.58	63.93 ± 9.68	54.69 ± 25.04	71.37 ± 14.85	55.46 ± 12.96
	Yes n=237	46.37 ± 12.88	31.86 ± 36.36	68.64 ± 40.66	48.50 ± 8.72	63.63 ± 6.64	56.03 ± 24.65	69.30 ± 13.68	56.71 ± 11.75
	Test P	z = -0.648 P = .517	z = -0.833 P = .405	z = -0.169 P = .866	z = -1.537 P = .124	z = -0.817 P = .414	z = -0.428 P = .669	z = -1.897 P = .058	z = -0.743 P = .457
<b>Pruritus</b>	No n=138	47.46 ± 13.66	36.23 ± 38.45	68.60 ± 41.62	48.59 ± 10.91	63.39 ± 8.98	57.90 ± 24.15	69.75 ± 13.70	56.28 ± 12.26
	Yes n=212	46.70 ± 12.59	31.37 ± 36.92	67.14 ± 42.00	48.96 ± 8.90	63.94 ± 6.83	54.10 ± 25.08	70.12 ± 14.35	54.49 ± 11.46
	Test P	z = -0.747 P = .455	z = -1.153 P = .249	z = -0.259 P = .796	z = -0.207 P = .836	z = -0.312 P = .755	z = -1.399 P = .162	z = -0.584 P = .559	z = -1.292 P = .196
<b>Varicose veins</b>	No n=248	47.10 ± 12.58	34.48 ± 37.59	67.61 ± 41.82	49.86 ± 9.72	64.08 ± 7.69	55.08 ± 24.90	70.56 ± 13.69	55.66 ± 11.99
	Yes n=102	46.76 ± 14.05	30.39 ± 37.50	67.97 ± 41.93	46.27 ± 9.33	62.86 ± 7.83	56.86 ± 24.45	68.53 ± 14.97	54.08 ± 11.28
	Test P	z = -0.735 P = .463	z = -1.010 P = .313	z = -0.132 P = .895	<b>z = -3.147</b> <b>P = .002</b>	z = -1.228 P = .220	z = -0.561 P = .575	z = -1.138 P = .255	z = -1.154 P = .248
<b>Hirsutism</b>	No n=265	46.87 ± 13.34	34.25 ± 38.86	68.55 ± 41.85	48.64 ± 9.89	63.74 ± 7.52	55.25 ± 24.83	69.68 ± 14.46	55.49 ± 11.99
	Yes n=85	47.41 ± 11.97	30.29 ± 33.21	65.10 ± 41.76	49.35 ± 9.25	63.67 ± 8.45	56.71 ± 24.61	70.88 ± 12.87	54.27 ± 11.19
	Test P	z = -0.241 P = .809	z = -0.472 P = .637	z = -0.951 P = .342	z = -0.681 P = .496	z = -0.029 P = .977	z = -0.405 P = .685	z = -0.350 P = .727	z = -0.856 P = .392
<b>Androgenetic alopecia</b>	No n=324	47.10 ± 13.17	33.18 ± 37.00	68.93 ± 41.16	48.46 ± 9.86	63.51 ± 7.87	56.98 ± 24.46	69.94 ± 14.22	55.48 ± 11.89
	Yes n=26	45.77 ± 10.93	34.62 ± 44.76	52.56 ± 47.30	53.27 ± 6.62	66.46 ± 5.32	38.46 ± 22.22	70.38 ± 12.48	51.62 ± 10.16
	Test P	z = -0.261 P = .794	z = -0.226 P = .821	z = -1.742 P = .081	<b>z = -3.071</b> <b>P = .002</b>	<b>z = -2.155</b> <b>P = .031</b>	<b>z = -3.578</b> <b>P = .000</b>	z = -0.061 P = .951	z = -1.909 P = .056

\* z: Mann-Whitney U test; \*\*higher score indicates absence of pain.

it, but they experienced less pain. It could be concluded that linea nigra has an adverse impact on emotional health due to its prevalence, visibility, gradual increase during pregnancy, and darkening of the skin color which does not disappear completely. However, it was determined that the daily lives of pregnant women with linea nigra were affected more by bodily pain than those without the condition. Studies investigating the relationship between pain and physiological skin changes could not be found. Considering that linea nigra occurs due to the impact of hormonal factors, it could be suggested that there is a need for studies investigating the relationship between pain, hormone levels, and line nigra.

In the study, it was found that the quality of life of pregnant women with striae gravidarum was low according to the SF-36 social functioning sub-scale. Yamaguchi et al<sup>21</sup> reported that the condition of having striae gravidarum had no impact on the general quality of life of women. In their study conducted on postpartum women, Kordi et al<sup>12</sup> reported that striae gravidarum caused a deterioration in the general quality of life of women. Results regarding general quality of life are contradictory; however, our study findings demonstrate that striae gravidarum limits the social activities of pregnant women due to the problems regarding their physical health and emotional well-being which has an impact on the social functioning aspect of their quality of life.

It was found that the quality of life of pregnant women with pruritus was low according to the SF-36 social functioning sub-scale. In the study of Murota et al.<sup>37</sup> it was reported that pruritus deteriorates the individual's performance at work and school, thus negatively affecting daily life. The low quality of life indicated by the social functioning sub-scale in our study is similar to the results of Murota et al.<sup>37</sup> Pregnant women with pruritis restrict their social activities.

It was found that the quality of life of pregnant women with varicose veins was low according to the SF-36 energy/vitality sub-scale. Varicose veins are known to have disturbing symptoms and have a negative impact on quality of life. Symptoms such as pain, itching, varicose eczema, pigmentation, bleeding, and varicose ulcers may also be observed in varicose veins.<sup>38</sup> In their study which investigated the effect of lower extremity symptoms such as pain, itching, and cramping observed in varicose veins on quality of life, Darvall et al<sup>26</sup> found that the mental health of the individuals with symptoms was affected more than those who did not have the symptoms. It could be argued that varicose veins negatively affect the physical movements of pregnant women. Our study results show that varicose veins have a negative impact on quality of life, similar to the results of Darvall et al.<sup>26</sup>

It was found that the quality of life of pregnant women with hirsutism was low according to the SF-36 social functioning sub-scale. In the study of Coffey and Mason,<sup>39</sup> it was reported that women with hirsutism experienced a higher fear of social relationships and restricted their social activities compared to those without the condition. Dermatologic problems cause individuals to experience psychological difficulties and affect their social life as well as their lifestyle.<sup>18</sup> This information is similar to the low quality of life according to the social functioning sub-scale demonstrated in our study.

In the present study, it was determined that the quality of life in individuals with androgenetic alopecia was better according to the SF-36 energy/vitality and mental health sub-scales but lower

according to the bodily pain sub-scales. There is no study on androgenetic alopecia in pregnancy; however, in a study conducted on alopecia in high school students, it was reported that the quality of life was poor in those with alopecia according to the SF-36 general health, energy/vitality, and mental health sub-scales.<sup>40</sup> In their study, Vander Donk et al<sup>41</sup> reported that androgenetic alopecia had a negative effect on the quality of life of women, that the daily lives of 88% were affected due to hair loss, and that 50% experienced social problems. Androgenetic alopecia in pregnancy develops due to physiological changes with a relatively low incidence.

### Limitations

Studies investigating the effect of physiological skin changes on quality of life are limited. The reliability of the SF-36 quality of life scale was found to be low; however, since the general quality of life scale was used in the study on striae gravidarum<sup>12,21</sup> and there was no specific scale specific to pregnant physiological skin changes, the SF-36 scale was used in this study.

### Conclusion

The most frequently observed physiological skin changes in the study were determined to be melasma, linea nigra, striae gravidarum, and gingival changes. While the quality-of-life sub-scales revealed that the mental health of the pregnant women with linea nigra, the social functioning of the pregnant women with striae gravidarum, pruritis, and hirsutism, and the energy of the pregnant women with varicose veins were negatively affected, it was considered that the total quality of life was not affected by skin changes. Health professionals should develop an awareness of this issue. Skin changes that occur during pregnancy should be evaluated and the women's attitudes, thoughts, and experience regarding these changes should be questioned in routine follow-ups. Counseling should be provided to pregnant women who react negatively to skin changes and who experience social problems and think that their normal life is affected by these changes.

**Ethics Committee Approval:** Ethics committee approval was received for this study from the Ethics Committee of İstanbul University-Cerrahpaşa (Date: December 4, 2018, number: A-48).

**Informed Consent:** Written informed consent was obtained from women who participated in this study.

**Peer-review:** Externally peer-reviewed.

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