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The Relationship between Socio-demographic Characteristics, Body Image and Quality of Life with Physiological Skin Changes in Pregnancy

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ABSTRACT

Background & aim: Physiological skin changes in pregnant women can negatively affect both women's self-image and their quality of life. This study aimed to examine the relationship between socio-demographic characteristics, body image, and quality of life with physiological skin changes in pregnant women.

Methods: This cross-sectional study was performed on pregnant women who attended the obstetricoutpatient clinic of a training and research hospital in Turkey between April and May 2019. The sample consisted of 350 pregnant women aged 18-45, who were in their second or third trimester, had singleton pregnancy and gave birth to a healthy fetus, and were literate in Turkish. A questionnaire featuring socio-demographic and obstetric characteristics, alongside the Body-Cathexis Scale and SKINDEX-16 for measuring body image and quality of life were used to collect the data. The data were analyzed with Mann-Whitney U Test, Chi-square test and spearman correlation.

Results: A significant difference was found between women with and without Stria gravidarum, hirsutism, androgenetic alopecia, and varicose veins according to the subjects' socio-demographic and obstetric characteristics. There was a significant difference in the body-image of pregnant women according to presence of varicose vein and hirsutism status (P<0,05). The same also applied to their quality of life, according to presence of melasma, linea nigra, stria gravidarum, gingival change, pruritus, and hirsutism (p<0.05).

Conclusion: The physiological skin changes can affect the body image and quality of life of the pregnant women. Counseling services should be offered to pregnant women think that their life is affected by skin changes during pregnancy.

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Introduction

Pregnancy is a period when pregnant women undergo certain physiological changes in their body. These changes take place in their skin and fall into three categories: physiological changes, non-pregnancy-specific dermatoses, and pregnancy-specific dermatoses. The most common changes include (1) stria gravidarum and hyperpigmentation (melasma, linea nigra), as well as changes to the hair, nail, vascular and gingiva (2). These changes are caused by immunological, metabolic, endocrine and vascular changes. However, numerous studies have reported that physiological skin changes differ according to the subjects' socio-demographic and obstetric characteristics, such as age, weight and parity (3-4).

Skin changes – like other physical changes that take place during pregnancy – can also negatively affect women's sense of body image and the quality of life (5-6) Body image is one's thoughts, feelings, and attitudes to his/her body. It is a sociocultural and dynamic variable that is positively or negatively affected by the pregnancy-related physiological changes, which are part of a healthy pregnancy (7). Negative body image increases distress (8-9). Skin changes can have a negative impact on body image. The quality of life may also be influenced

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by these changes. Therefore, healthcare professionals including midwives and nurses should examine skin problems and how they affect their patients' pregnancy during routine follow-ups. However, to date, few studies has examined this particular issue. Moreover, the number of studies looking at the physiological skin changes of pregnant women according to their socio-demographic backgrounds is also few (Atwal et al., 2006; Liu et al., 2018). Aiming to help fill this knowledge gap, the current cross-sectional descriptive study was conducted to examine the socio-demographic characteristics, body image, and quality of life of pregnant women according to their physiological skin change.

Materials and Methods

The population of this cross-sectional descriptive study consisted of pregnant women who attended obstetrics and gynecology outpatient clinics of a training and research hospital in Turkey, between April and May 2019. The sample size was calculated to be at least 322, at the margin of error of 5% and power rate of 95%, based on the prevalence rate (71%) in the study by Akkoca et al., (2014). Three hundred fifty (350) pregnant women who were selected by random sampling method from those who met inclusion criteria were included in the sample. Pregnant women who were diagnosed with high-risk pregnancy (e.g. multiple pregnancy, adolescent pregnancies), or suffered from dermatosis before and during pregnancy, chronic disease, vision/hearing impairment, and/or psychiatric disorders were excluded.

All of the data were gathered using three tools: a questionnaire featuring socio-demographic and obstetric characteristics as well as physiological skin changes, Body-Cathexis Scale (BCS), and SKINDEX -16.

The socio-demographic, obstetric and physiological skin changes questionnaire consisted of 15 questions designed to ask the subjects about women's socio-demographic characteristics and obstetric history as well as presence of physiological skin changes including stria gravidarum, melasma, linea nigra, spider angioma, palmar erythema, varicose veins, acrocardia, nevus change, hirsutism, androgenetic alopecia, nail change, leukonia, subungual hyperkeratosis, simple fracture, onycholysis, transverse streaking, gingival change, and pruritus.

The Body-Cathexis Scale was developed by Sicard and Jerard in 1953. Based on the idea that people's satisfaction with their bodies is tied to the notion of self-concept, it sets out to measure the subject's level of satisfaction with their body parts or functions. It has 40 items. Total score of the scale varies between 40 and 200 points. The higher a score one gets, the less satisfied with their bodies they are increase. Hovardaoğlu adapted the scale to Turkish in a study on university students in 1986 by reporting that its reliability coefficient was 0.75, the item-test correlation ranged between r = 0.45 and r = 0.89, and Cronbach's alpha coefficient was 0.91(10). In the present study, Cronbach's alpha coefficient of the scale was found to be 0.57.

SKINDEX-16 is a quality-of-life scale specific to the field of dermatology. It consists of three subscales (symptom, emotion, function), and 16 items rated between 1 and 7 points each. Total score ranges between 16 and 112 points. The lower a score one gets, the better their overall quality of life is (11-12) Aksu et al., (2016) adapted it into Turkish in their study including 340 patients with various dermatological diseases. They determined that its Cronbach's alpha coefficient was 0.87, 0.91, and 0.91 for the symptom, emotional and functional subscales[12]. In the current study, Cronbach's alpha coefficient of SKINDEX-16 was found to be 0.93.

All of the data was collected using the socio-demographic and obstetric characteristics questionnaire, BCS, and SKINDEX-16 during face-to-face interviews. The subjects were shown the images of the skin conditions on the questionnaire, and asked to mark down which ones they had. Afterwards, the women underwent a physical examination to determine how their skin had changed. It took about 20 minutes to collect the data.

The participants were informed and asked to give their consent beforehand. Ethical approval was obtained from Clinical Trials Ethics Committee (59491012-604.01-106524). Written permission was also obtained from the related hospital.

Data was analyzed using SPSS 24.0 software. Shapiro Wilk test was used to determine

whether or not the data were normally distributed. The results of analysis were expressed as mean, standard deviation, median, percentage, as well as minimum and maximum values. Mann Whitney U test was employed to compare non-normally distributed data. Chi-square test was carried out to analyze categorical variables. The relationship between BCS and f SKINDEX-16 was examined by Spearman correlation analysis. The statistical significance was accepted as $p<0.05$.

Results

The results of the study indicated that 67.7% of the subjects were multipara and 23.3% were primipara. 78.9% of the pregnancies were planned. 59.7% of the subjects (n=209) used medications regularly during pregnancy. The most common physiological skin changes included melasma (87.4%), followed by linea nigra (83.1%), stria gravidarum (SG) (72.6%), gingival changes (67.7%), pruritus (60.6%), varicose veins (29.1%), hirsutism (24.3%), and androgenetic alopecia (7.4%) (Table 1).

Table 1. The frequency distribution of pregnant women's socio-demographic, obstetric and physiological skin changes (N=350)

Variable	Mean±SD/Median (Min-Max)
Age (years)	28.07±5.46.27.50 (18-41)
Pre-pregnancy weight (kg)	65.15±13.71.64 (42-124)
Pregnancy weight (kg)	77.46±13.40.76 (50-130)
Weight gain (kg)	12.43±6.52.12 (0-43)
Variable	**N (%)**
Education level	
Primary school	134 (38.3)
Middle school	177 (50.6)
University	39 (11.1)
Employment	
Employed	55 (15.7)
Unemployed	295(84.3)
Insurance	
Yes	321 (91.7)
No	29 (8.3)
Type of family	
Nuclear	317 (90.6)
Extended	33 (9.4)
Gravidity	
Primipara	113 (32.3)
Multipara	237 (67.7)
Planning status of pregnancy	
Intended	276 (78.9)
Unintended	74 (21.1)
Using medications related to pregnancy	
Yes	209 (59.7)
No	141 (40.3)
Physiological skin changes	
Melasma	306 (87.4)
Linea nigra	291 (83.1)
Stria gravidarum	254 (72.6)
Gingival Change	237 (67.7)
Pruritus	212 (60.6)
Varicose veins	102 (29.1)
Hirsutism	85 (24.3)
Androgenetic Alopecia	26 (7.4)

Although melasma, linea nigra, gingival change and pruritus are not given in Table 2, no difference was found between women with and without these skin changes according to the subjects' socio-demographic and obstetric characteristics. However, stria gravidarum, hirsutism, androgenetic alopecia, and varicose veins showed statistically significant differences in two groups of women with and without these skin changes (Table 2).

Table 2. Socio-demographic and obstetric characteristics in women with or without physiological skin (changes (N=350

Variable	Stria Gravidarum		Hirsutism		Androgenetic Alopecia		Varicose veins	
	Yes (n=254)	No (n=96)	Yes (n=85)	No (n=265)	Yes (n=26)	No (n=324)	Yes (n=102)	No (n=248)
Age (mean)	27.71±5.46	29.04±5.39			26.15±6.31	28.23±5.37	29.24±5.34	27.60±5.45
	z=-2.156	p=0.031*			z=-2.036	p=0.042**	z=-2.693	p=0.007*
Weight (kg)	78.24±13.33	75.41±13.43						
	z= -2.047	p=0.041*						
Educational level								
Primary school	90 (35.4%)	44 (45.8%)	18 (21.2%)	116 (43.8%)				
Middle School	140 (55.1%)	37 (38.5%)	55 (64.7%)	122 (46.0%)				
University	24 (9.4%)	15 (15.6%)	12 (14.1%)	27 (10.2%)				
	χ^2=8.139	p=0.017*	χ^2=13.910	p=0.001*				
Gravidity								
Primipara			75 (28.3%)	38 (55.3%)				
Multipara			190 (71.7%)	17 (44.7%)				
			χ^2=7.921	p=0.005*				
Planning status of pregnancy								
Intended			75 (88.2%)	201 (75.8%)				
Unintended			10 (11.8%)	64 (24.2%)				
			χ^2=5.922	P= 0.015*				

z: Mann-Whitney U test; χ^2: Chi-square test *p<0.05

Mean age, weight at pregnancy and level of education were significantly different between the women with SG and those without SG (p<0.05). Those with SG had a lower mean age and higher mean weight than those without SG. A significantly lower rate of the university graduates had SG compared to those who only finished primary and/or middle school. The rate of hirsutism differed significantly in terms of education, parity, and intended pregnancy (p<0.05). A significantly low rate of the university graduates had hirsutism compared to those who only finished primary and/or middle school. Few multipara women had hirsutism compared to primipara ones. Likewise, a significantly lower rate of the women with unintended pregnancy had hirsutism (p<0.05). The mean age significantly differed between subjects with varicose veins and those without varicose veins, as well as between women with androgenetic alopecia and those without it (p<0.05). The mean age was significantly lower in those with androgenetic alopecia than those without androgenetic alopecia. The mean age of the subjects with varicose veins was

significantly higher than the mean age of those without varicose (Table 2).

Table 3. The distribution of the BCS and SKINDEX-16 mean scores according to physiological skin changes

Variable	BCS	SKINDEX-16			
		Symptom	Emotional	Functional	Total score
Mean±SD (Min-Max)	109.35±8.03 (91-128)	9.69±4.17 (4-23)	21.02±9.49 (7-42)	12.55±7.53 (5-34)	43.26±18.07 (16-82)
Physiological skin changes					
Melasma					
Yes (n=44)	107.48±9.35	9.68±3.87	14.59±6.70	7.52±4.35	31.80±12.55
No (n=306)	109.63±7.80	9.69±4.22	21.94±9.48	13.28±7.62	44.92±18.15
Test	z=- 1.629	z=-0.275	z=-4.724	z=-4.840	z=- 4.386
P value	p=0.103	p=0.783	p=0.000*	p=0.000*	p=0.000*
Linea Nigra					
Yes (n=59)	108.69±9.27	10.14±4.33	17.14±7.97	9.42±5.61	36.69±15.32
No (n=291)	109.49±7.77	9.60±4.14	21.81±9.59	13.19±7.72	44.60±18.31
Test	z=- 0.701	z=-0.804	z=-3.333	z=-3.359	z=- 2.933
p value	p=0.484	p=0.422	p=0.001*	p=0.001*	p=0.003*
Stria Gravidarum					
Yes (n=96)	108.84±8.56	9.56±4.76	17.95±8.94	11.06±7.51	38.32±18.14
No (n=254)	109.55±7.83	9.74±3.94	22.18±9.44	13.12±7.47	45.13±17.72
Test	z=- 0.843	z=-1.017	z=-3.592	z=-2.547	z=- 3.153
p value	p=0.399	p=0.309	p=0.000*	p=0.011*	p=0.002*
Gingival change					
Yes (n=113)	109.78±8.77	9.49±4.04	19.06±9.27	10.65±7.11	39.20±17.91
No (n=237)	109.16±7.66	9.79±4.24	21.95±9.47	13.46±7.57	45.20±17.85
Test	z=- 0.653	z=-0.584	z=-2.678	z=-3.540	z=- 2.810
P value	p=0.514	p=0.559	p=0.007*	p=0.000*	p=0.005*
Pruritus					
Yes (n=138)	108.73±8.58	6.83±266	18.10±10.20	10.27±7.30	35.20±17.86
No (n=212)	109.76±7.64	11.55±3.92	22.92±8.49	14.04±7.32	48.51±16.20
Test	z=- 0.926	z=-11.258	z=-4.992	z=-5.346	z=- 7.036
p value	p=0.355	p=0.000*	p=0.000*	p=0.000*	p=0.000*
Varicose veins					
Yes (n=248)	108.58±7.97	9.67±4.30	20.47±9.49	12.09±7.36	42.13±18.18
No (n=102)	111.25±7.90	9.74±3.86	22.36±9.38	13.68±7.84	46.01±17.56
Test	z=- 2.709	z=-0.468	z=-1.790	z=-1.742	z=-1.862
p value	p=0.007*	p=0.640	p=0.073	p=0.081	p=0.063
Hirsutism					
Yes (n=265)	108.89±8.21	9.62±4.13	20.20±9.40	12.20±7.57	42.01±18.15
No (n=85)	110.80±7.32	9.92±4.32	23.59±9.34	13.67±7.33	47.18±17.34
Test	z=- 1.975	z=-0.456	z=-2.826	z=-2.022	z=- 2.179
p value	p=0.048*	p=0.648	p=0.005*	p=0.043*	p=0.029*
Androgenetic alopecia					
Yes (n=324)	109.15±8.01	9.71±4.16	21.24±9.47	12.77±7.62	43.64±18.12
No (n=26)	111.92±7.97	9.50±4.40	18.31±9.47	9.85±5.75	38.58±16.95
Test	z=- 1.912	z=-0.344	z=-1.569	z=-1.785	z=-1.482
p value	p=0.056	p=0.731	p=0.117	p=0.074	p=0.138

BDC= The Body-Cathexis Scale, A high score indicates a decrease in satisfaction *z: Mann-Whitney U test;
** A high score for SKINDEX-16 indicates a poor quality of life.

The BCS mean score was 109.35 ± 8.03, ranging between 91 and 128 (Table 3). BCS scores of the subjects who had varicose veins and hirsutism were significantly higher than those of the subjects who did not have these changes (p<0.05). There was no significant difference between the BCS mean scores in terms of melasma, linea nigra, SG, gingival change, pruritus, or androgenetic alopecia (p>0.05) (Table 3).

The mean scores for SKINDEX-16 and its symptom, emotional, and functional subscales were 43.26±18.07, 9.69±4.17, 21.02±9.49, and 12.55±7.53l respectively. A significant difference was found in the mean scores of SKINDEX-16 and the emotional and functional subscales in terms of melasma, linea nigra, SG, gingival change, pruritus, or hirsutism. There also was a significant difference between the subjects' mean scores of the symptom subscale in terms of the presence of pruritus and hirsutism (p<0.05). The subjects with melasma, linea nigra, SG, gingival change, pruritus, and hirsutism obtained a significantly higher mean score from the SKINDEX-16 and its emotional and functional subscales compared to those lacking those skin changes. However, the subjects with pruritus and hirsutism had a significantly higher mean score in the symptom subscale (Table 3).

There was no significant correlation between the BCS mean scores and the mean scores of SKINDEX-16 (r=0.092, p=0.085) and its symptom (r=0.076 p=0.155), emotional (r=0.085 p=0.112) and functional subscales (r=0.053, p=0.322) (Table 4).

Table 4. The correlation of the BCS score with the scores of SKINDEX-16 and its subscales

	SKINDEX-16 total	Symptom	Emotional	Functional
BCS	r=0.092 p=0.085	r=0.076 p=0.155	r=0.085 p=0.112	r=0.053 p=0.322

r: Spearman correlation coefficient

Discussion

In this study, the most commonly observed physiological skin changes were melasma, linea nigra, SG, and gingival changes. In the literature, prevalence rates are 15.8%- 64% for melisma (1,13) 54.75% - 89.2% for linea nigra [1,13] 46.96%-60% for SG, [1,14] and 43% for gingival changes (14) The four most frequent physiological skin changes seen in this study were similar to the ones in the literature; however, they displayed higher prevalence rates. It is known that the prevalence of physiological skin changes increases as the gestational week progresses (1). This study was conducted on women who were in their second and third trimesters, which might explain the higher prevalence rates of the physiological skin changes in this study.

The mean age of the subjects with SG was significantly lower than that of those without SG. Compatible with this finding, similar studies revealed that pregnant women with SG were younger than those without SG and young age was a risk factor for the development of SG (5,15-16). The results of the present study showed that the mean weight of the subjects with SG was significantly higher than that of those without SG. Likewise, several other studies also indicated that pregnant women with SG had higher BMIs than those without SG (15,16) Kılıç et al.,'s study (2015) reported that the mean weight of the pregnant women with SG was higher than the mean weight of those without SG (17). Findings of the present study suggest that the development of SG is associated with weight gain, which is compatible with the literature. In the current study, the prevalence of SG was significantly lower in university graduates than the primary and middle school graduates. Canpolat et al., (2010) discovered a significant difference in the presence of SG based on the subject's educational level, reporting that SG was less common in university graduates (18). Another study showed that most of the pregnant women with low education levels had SG and the low education level was a risk factor (16). The prevalence of SG was lower in subjects with high education levels in this study, which is compatible with the literature

In this study, the prevalence of hirsutism was significantly lower among the multiparous pregnant women compared to their primipara counterparts. Conflicting with this finding, Dertlioğlu et al., (2011) found no correlation between hirsutism and parity (14). What causes hirsutism during pregnancy currently remains unclear. That noted, hormonal, genetic and environmental conditions – which were not evaluated in this study – might be also effective in hirsutism.

A significantly lower rate of the university graduates had hirsutism compared to those who finished primary and middle school. Additionally, a lower rate of the women with unintended pregnancy had hirsutism. However, no studies published to date have so far explored the relationship between hirsutism, level of education, and one's pregnancy planning status. Findings of the present study showed that hirsutism was significantly more common among subjects who finished primary school and those who had an intended pregnancy. Still, it seems that many contradicting factors such as hormones and genetic predisposition – again, which were not evaluated in this study – might have played a significant role in the development of hirsutism.

The mean age of subjects with androgenetic alopecia was significantly lower than that of the women without androgenetic alopecia. The cause of androgenetic alopecia in pregnancy is not known well. However, the literature suggests that pregnancy affects the amount, structure, and quality of hair (19). Moreover, hormonal changes, nutritional deficiency, mental well-being, and thyroid diseases also affect one's hair during pregnancy and stress plays a major role, as well (20). The findings of the present study also revealed that various factors such as stress, nutrition, and hormonal factors can be effective in the development of androgenetic alopecia.

The mean age of the women with varicose veins was significantly higher than that of those without them – which is consistent with the literature. Barros Junior et al., (2010) reported that family history and age are risk factors in the development of varicose veins, and its prevalence increases with increasing age (21).

As a subjective and individual perception about one's own body, body image is regarded as a basic component of personality. The physiological changes that occur during pregnancy can cause women to perceive themselves differently and change their body image perceptions. Body image during pregnancy is affected by many factors (6). The BCS score was found to be 146.3 in adolescent pregnant women in the study by Çırak and Özdemir (2015) (22) and 158.84 in pregnant women in 38-40 weeks of gestation in the study by Erkaya et al., (2018) (23). In this study, the BCS mean score (109.35) of the subjects was lower than those reported by both Çırak and Özdemir and Erkaya et al. (22-23) and satisfaction with body image was higher. These differences might have been associated with the characteristics of our sample.

The BCS mean score of the subjects what had varicose veins was significantly higher than that of those without them. This suggests that the body image of the subjects with hirsutism was worse. Genetic predisposition, increased elastic tissue fragility, and increased venous pressure due to uterine compression all play a role in the development of varicose veins in pregnant women (24). In Fernandes and Amaral's study (2015), 41.21% of the subjects had vascular changes; furthermore, their physiological skin change prevalence increased with increasing gestational week (1). Varicose veins tend to be more common in pregnant women who are in their second and third trimesters, due to an enlarged uterus. The present study included pregnant women who were in their second and third trimesters. Therefore, it can be suggested that varicose veins, which become evident with the progression of pregnancy, negatively affected their body image. Similarly, Inanir et al., (2015) reported that perceived body image was worse among women who were in their third trimester, -during which changes are most evident than in other trimesters- and had a negative correlation with pregnancy trimesters (25). The BCS mean score of the subjects who had hirsutism was significantly higher than that of the subjects without hirsutism. This finding suggests that the body image of the subjects with hirsutism was worse than those without it. A separate study conducted on the women

diagnosed with polycystic ovary syndrome reported that 92% of them also had hirsutism (26). It may be thought that hirsutism during pregnancy affects the physical appearance of women – most notably the face – and thus affects their sense of body image.

In regards to correlation between the quality of life and skin changes, the present study demonstrated that the quality of life of the subjects with melasma, linea nigra, SG, gingival change, pruritus, and hirsutism was worse than that of the women without these changes. In the literature it is suggested that melisma (1,27-28), hyperpigmentation (29), SG (15,30), and gingival changes (27) all have the power to affect pregnant women's lives negatively. Studies including non-pregnant women have reported that pruritus (31) and hirsutism (30) also have a bad effect on women's quality of life. Similarly, the current study revealed that the subjects were adversely affected by both pruritus and hirsutism.

In the current study, it was determined that there was no correlation between body image and quality of life. A study reported that mild disorders affected the quality of life of pregnant women at a low rate (32). Even though physiological skin changes do not threaten the life of mother or baby, they can negatively affect women's quality of life. The findings of this study cannot be generalized to pregnant women in Turkey.

Conclusion

In the light of study findings, it was concluded that physiological skin changes during pregnancy can affect women's body image and the quality of life; however, there was no correlation between the dermatology-specific quality of life and body image. Therefore, it can be recommended to raise awareness of healthcare professionals about the effects of these physiological changes on the body image so that the quality of life should be enhanced. It is suggested to assess the skin changes of pregnant women during routine follow-up and question their attitudes and thoughts about skin changes during pregnancy. Counseling services should be offered to pregnant women who have social problems and think that their life is affected by skin changes during pregnancy.

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Conflicts of interest

Authors declared no conflicts of interest.

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