



## Skin physiological alterations perceived by pregnant women attended at public health services\*

*Alterações fisiológicas da pele percebidas por gestantes assistidas em serviços públicos de saúde*

*Alteraciones fisiológicas de la piel percibidas por gestantes asistidas en servicios públicos de salud*

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### ABSTRACT

**Objective:** To describe skin changes perceived by pregnant women during the gestation period and verify the level of discomfort caused by those changes. **Methods:** Is a descriptive study involving 124 pregnant women in four basic health units in the eastern region of Sao Paulo. **Results:** Most women (91.1%) perceived skin changes during the period of gestation. In total, 345 physiological alterations were recorded. The alterations most frequently cited were: skin spots, vascular changes and grooves. The majority of them reported discomfort due to those changes. **Conclusion:** The knowledge about the alterations allows the health professional to not undervalue these problems and to not invest in unnecessary interventions.

**Keywords:** Skin diseases; Pregnancy complications; Nursing

### RESUMO

**Objetivo:** Descrever as alterações de pele percebidas por gestantes durante o período gestacional e verificar o grau de incômodo que tais modificações provocaram. **Métodos:** Estudo descritivo exploratório com participação de 124 gestantes, de quatro unidades básicas de saúde da região Leste de São Paulo. **Resultados:** A maioria das gestantes (91,1 %), percebeu mudanças na pele, durante o período gestacional. No total, foram registradas 345 alterações fisiológicas. As alterações mais citadas foram as manchas, alterações vasculares e estrias. A maioria relatou desconforto em razão dessas alterações. **Conclusão:** O conhecimento sobre as alterações permite ao profissional de saúde não subvalorizar esta problemática nem tampouco investir em intervenções desnecessárias.

**Descritores:** Dermatopatias; Complicações na gravidez; Enfermagem

### RESUMEN

**Objetivo:** Describir las alteraciones de piel percibidas por gestantes durante el período de gestación y verificar el grado de incomodidad que esas modificaciones provocaron. **Métodos:** Estudio descriptivo exploratorio con participación de 124 gestantes en cuatro unidades básicas de salud de la región Este de Sao Paulo. **Resultados:** Durante el período de gestación la mayoría de las gestantes (91,1 %) percibió cambios en la piel. En total, fueron registradas 345 alteraciones fisiológicas. Las alteraciones más citadas fueron: manchas, alteraciones vasculares y, estrias. La mayoría relató incomodidad debido a esas alteraciones. **Conclusión:** El conocimiento sobre las alteraciones le permite al profesional de la salud no subvalorizar esta problemática ni invertir en intervenciones desnecesarias.

**Descriptores:** Enfermedades de la piel; Complicaciones del embarazo; Enfermería

\* Study carried out in four basic health units located in Penha regional administration, eastern area of São Paulo (SP), Brazil.

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## INTRODUCTION

Skin problems during pregnancy can be divided into three apparent groups: the exacerbation of existing skin diseases, the appearance of specific dermatoses typical of pregnancy and the onset of physiological changes<sup>(1-3)</sup>.

The first group consisted of women who had a skin disease prior to pregnancy, such as : atopic eczema, psoriasis, leprosy, lupus erythematosus and pemphigus. These skin problems are more susceptible to worsening than improvement during this period, but require extra dermatological monitoring<sup>(3)</sup>. In the second group, we have pregnant women with dermatoses of pregnancy. These are eruptions that occur only during pregnancy and are triggered by it<sup>(3)</sup> such as: pemphigoid gestationis, polymorphic eruption of pregnancy, pruritus of pregnancy and pruritic folliculitis of pregnancy<sup>(4)</sup>. Diseases of such groups may generate risks and damage to mother and infant, depending on some factors as the size and depth of injuries, risk of infection, type of treatment and others needs such as sleep, food and change of emotional state.

The third group comprises the physiological changes of the skin. They are not commonly reported by dermatologists and obstetricians but are considered as physiological responses. The taxonomy, although slightly conflicting, generally includes: pigmentary changes, alterations in connective tissue (striae), also changes observed in hair and nails, vascular disorders<sup>(3-7)</sup> and acne<sup>(8-9)</sup>.

Physiological changes are the most common dermatological findings during pregnancy. The results obtained in a study with 104 pregnant women are in accordance to what is observed in the practice. The authors during the interviews with pregnant women listened to their complaints regarding skin alterations in pregnancy. They found 279 events, of which 254 are classified as physiological changes of pregnancy, 25 dermatoses affected by pregnancy and no specific dermatosis of pregnancy<sup>(10)</sup>. Usually, physiological responses have no effect on the fetus or cause internal commitment to the mother, do not affect the physical health, but some of them might be esthetically significant and of dermatologic importance. As some indicators according to the dermatological census of the Brazilian Society of Dermatology<sup>(11)</sup>, it is possible to mention the high demand of treatment for disorders of pigmentation and acne, with hardly any solution of these problems.

Lack of knowledge by the health professionals regarding physiological changes of skin on the gestation period may trigger two situations with negative consequences: on one hand, may minimize the extent of skin condition faced by pregnant women<sup>(4)</sup> and, on the other hand, can stimulate research and unnecessary treatment<sup>(7)</sup>. Nevertheless, it is the nurses' responsibility

who work and follow-up pregnant women, to know about these occurrences, establishing accurate diagnoses and, to incorporate into the assistance project effective measures for the potential and real identified problems. Consequently, in order to obtain subsidies for the implementation of an education project about skin care in basic health units in the east area of the city of São Paulo, the following objectives were defined: to describe skin changes perceived by pregnant women during pregnancy and to verify the degree of discomfort caused by such changes.

## METHODS

This is a quantitative, descriptive and exploratory study performed in four basic health units (BHU), belonging to the regional administration of the *Penha* neighborhood, eastern area of São Paulo. The period of data collection ranged from March to July 2008. This study consisted of pregnant women users of these units. The inclusion criteria adopted were: women older than 18 years, pregnancy on the second or third trimester when the skin changes usually occurs, no preexisting skin problems and signed the Free Informed Consent. The approach was carried out in waiting rooms of prenatal visits, performed by nurses and doctors, and data was collected prior to the check-up. To implement the sample plan, we considered the fact that the population is not fixed and the services do not allow information on gestation age of the registered women. This was a convenience nonprobability sample technique, composed of 124 pregnant women, at the data collection time. All pregnant women who were present at data collection were invited to participate. No one refused to participate and confidentiality regarding identity of the participants was assured. The research project was approved by the Ethics Committee of the Municipal Health Secretariat of São Paulo (CEP / SMS 301/07)

Data was collect by means of a form, filled out by a researcher and trained graduate student. The instrument was composed of three areas: A- characterization of the population, considering the following variables: age, race, education, family income, and gestation age. The color of the skin was determined by the researchers. B - skin changes perceived during pregnancy, considering the following variables: type of alteration: hyperpigmentation, blemishes, stretch marks (striae), acne, increase in hair, hair fall, weakened nails, varicose veins, vessels and others. In this study, the pigmentary alterations "blemishes" and "hyperpigmentation" were considered as distinct patterns. As blemish is considered any alteration in skin color that did not exist prior to pregnancy and as hyperpigmentation areas any darkening area of the skin that has intensified. In this standard, we included

the darkening of the mammary areola, linea Alba and nevi. C - level of discomfort of the perceived skin changes. Three-point scale was used to rate level of discomfort felt by pregnant women: no discomfort, discomfort and extremely discomfort.

The aim of this study was not to compare the perceptions of skin changes reported by pregnant women in physical examination performed by the nurse or doctor. All women's reports related to skin changes were considered.

The data collected were discussed and analyzed, using the spreadsheet Excel (Microsoft).

## RESULTS

The sample consisted of pregnant women with ages ranging from 18 to 41 years, mean of 26.5 years. The majority, 59 (47.6%) were Caucasian, 39 (31.4%) mixed (*parda*), 24 (19.4%) black and two (1.6%) East Asians. The most frequent education level was finished middle education, representing 41 (33%) of the pregnant women. Only one (0.8%) did not attend the school, 23 (18.6%) reported having unfinished elementary education, eight (6.5%) finished elementary education, 33 (26.6%) unfinished middle education, 12 (9.7%) unfinished higher education and six (4.8%) finished higher education. Regarding income, 76 (63.3%) respondents mentioned receiving less than three minimum wages. Gestational age was distributed as follows: 57 (46%) women in the second quarter and 67 (54%) in the third quarter.

Regarding the investigation on skin changes perceived by pregnant woman, it was found that most women, 113 (91.2%) observed change in their skin, hair, nails and the minority 11 (8.8%) did not notice any change. An overall of 345 skin changes were mentioned by pregnant women. Table 1 presents the data obtained. The number of changes perceived by pregnant ranged from 0 to 7, with an average 2, 78 (SD = 1.89). Data corresponding to the minority of the findings were 12 (3.4%) grouped in "other changes". Also, it was mentioned: four edema (1.1%), three mentioned dry skin (0.9%), three mentioned glossy skin (0.9%) and two reduction of acne (0.6%).

Of the 11 women who did not perceived any changes, the majority (7), was in the second trimester of pregnancy. One woman was in the 14th week of pregnancy, five were in the 16th and the 24th. Regarding the third quarter, two were in the 28th week, one in the 30th and one in the 40th.

The result of the level of discomfort caused by perceived changes in the data is shown in Table 2. Of the 113 pregnant women who perceived changes in the skin, one did not verbalize the answer, declaring with a

dubious interpretation of facial expression.

**Table 1** - Skin changes perceived by pregnant women in four UBS. São Paulo, 2008.

Changes*	n.º	Change %	change/ total subgroup %
Pigmentary change	12		
Blemish*	3	35,7	-
Face	70	20,3	100,0
Breast	39	11,3	55,7
Neck	11	3,2	15,7
Abdomen	8	2,3	11,4
Arms	6	1,7	8,6
Back	3	0,9	4,3
Legs	2	0,6	2,9
Hyperpigmentation*	1	0,3	1,4
Linea alba	53	15,4	100,0
Breast aureoles	46	13,4	86,8
Vascular Alteration*	7	2,0	13,2
Varicose veins	61	17,7	100,0
Spider veins	32	9,3	52,5
Striae*	29	8,4	47,5
Abdomen	59	17,1	100,0
Buttocks	32	9,3	54,2
Thigs	13	3,8	22,0
Breast	7	2,0	11,9
Arms	6	1,7	10,2
Acne*	1	0,3	1,7
Face	44	12,8	100,0
back	35	10,1	79,6
Arms	4	1,2	9,1
Colon	3	0,9	6,8
Hair Alteration*	2	0,6	4,5
Hair Loss	33	9,6	100,0
Increase in hair	20	5,8	60,6
Weak nail	13	3,8	39,4
Other changes	13	3,7	-
	12	3,4	-

\* 345 changes considered as subgroups

**Table 2** – Level of discomfort perceived by 113 pregnant women, attended in four UBS due to skin changes. São Paulo, 2008.

Level of discomfort	n.º	%
No discomfort	36	31,9
Discomfort	50	44,2
Extremely discomfort	26	23,0
Non verbalized	1	0,9
<b>Total</b>	<b>113</b>	<b>100</b>

## DISCUSSION

This sample consisted mostly of women, in a

childbearing age, therefore, with a chance of future pregnancies and dermatological manifestations. Most had finished elementary school, which is satisfactory in educational processes. The predominance of low income is a factor that can interfere with the adoption of certain skin care, as the purchase of sunscreen considering that public health services do not provide this product.

Regarding the perception of skin changes, pigmentary alterations were the most frequent. This result is consistent with the literature. Blemishes were the most cited.

The chloasma or melasma gravidarum is the most evident change of pigmentation in pregnancy. It presents a brownish discoloration that affects mostly *Latinos* and Asians<sup>(12)</sup>. Occurs in up to 75% of pregnant women, most commonly on the face (63%), followed by the malar and the mandibular areas<sup>(13)</sup>. Often, symmetry or vesperitium disposed, reaching the nasal and malar areas. The intensity and extent of pigmentation varies<sup>(3)</sup>. They usually disappear completely within one year after childbirth, but about 30% of women evolve with some type of sequel of the blemish. It is more constant in women who used oral contraceptives, which reinforces the theory on the influence of estrogen and progesterone levels<sup>(3-4)</sup> and in vulnerable women, exposed to solar radiation<sup>(5)</sup>. One has to consider the use of various cosmetics containing perfume, hormones and other drugs that may contribute to the pigmentation<sup>(3)</sup>. The treatment consists of avoiding sunlight, prioritizing the shade, wearing hats, anti-actinic creams against UVA and UVB. There is no topically systemic treatment to those who develop blemish, despite the care and who present more severe episodes, using skin whitening products<sup>(1)</sup>. Pigmentation usually relapses after childbirth; thus, the medical management during pregnancy should be conservative with the use of hydroquinone in low concentrations and without the addition of tretinoin in the formula, due to the possible teratogenic effect of retinoids<sup>(6)</sup>.

Despite it is said that pigmentary changes can be generalized, studies strongly target to melasma. The involvement of other areas is rarely addressed. The women in this study mentioned blemishes in other areas of the body with emphasis on breast and neck. Hyperpigmentation is extremely common, affecting up to 90% of pregnant women<sup>(14)</sup>. It presents variable shapes and locations, often is generalized and with more emphasis on areas normally pigmented, such as the mammary areola, genitalia, perineum, axillae and inner part of the thighs. Recent scars, ephelides (freckles) and melanocytic nevi (spots) may also present increased pigmentation during pregnancy<sup>(4-6,15)</sup>.

Around the nipple, the areola becomes darker and is

gradually expanded, forming a new area of pigmentation known as the secondary areola. Frequently, the linea alba becomes hyperpigmented during pregnancy and is referred to as linea nigra. These models of hyperpigmentation are probably due to specific regional differences in the number of melanocytes in the skin and to the stimulating effects of estrogen and progesterone<sup>(13)</sup>.

The level of hyperpigmentation is related to the type of person's skin<sup>(5)</sup>, usually it is more severe in dark-skinned women<sup>(6)</sup>. Data obtained in this study showed that 63 women, among *pardo* (mixed) and black populations would be more susceptible to this change. The linea nigra was the most cited.

Both light and dark-skinned women might have partial or complete regression of darkening, occurring gradually after pregnancy. However, some authors report that the picture tends to relapse in the postpartum period, but the skin does not return to its original color, which can bring anguish to many pregnant women<sup>(4)</sup>.

Care and therapies for hyperpigmentation are less mentioned than melasma. In the post-partum, due to breastfeeding, the dermatologists prefer maintaining same measurements of the gestational period and not making interventions with the potent depigmenting therapy or in higher concentrations<sup>(9)</sup>.

The vascular changes were the second most mentioned modification, specifically: varicose veins and spider veins. Varicose disturbances occur in approximately 40% of pregnant women, affecting saphenous, vulvar and hemorrhoids veins<sup>(3)</sup>. For pregnant women with early lower limb varicose veins, there must be at least one congenital causal etiologic factor, such as congenital arteriovenous fistulae, laxity of the venous wall and hypoplasia. These factors associated with acquired factors are responsible for the development of varicose veins in the lower limbs. Pregnancy, as an acquired etiological factor, contributes to the early development of varicose process, due to compression of pelvic and abdominal venous vessels, hormonal increase and circulating maternal fetal fluids<sup>(16)</sup>.

Evidence suggests that women who had a previous pregnancy, have a higher incidence of varicose veins when compared with nulliparous and multiparous women with higher risk for this change<sup>(17)</sup>.

Swelling (edema) of legs and ankles often can accompany varicose veins. Resting, leg elevation and elastic stockings<sup>(6)</sup> are recommended. In this study, few women mentioned edema as a perceived change. Vascular spiders microvessels are characterized by three clinical aspects: central arterioles, slender branches and surrounding erythema. There is also a bright red and hottest local temperature<sup>(8)</sup>. Between the second and fifth



month of pregnancy they are more frequently observed in Caucasian women, accounting for 67% of impairment. They are restricted to drainage areas of the superior vena cava, such as face, neck and upper limbs, and its size tends to develop over months. Its origin seems to be related to high estrogen levels<sup>(4,6)</sup>. Currently, they can be treated by specialists, with aesthetic purpose, by means of electrocoagulation and laser therapy<sup>(3,6)</sup>. The third most frequent mentioned change are the stretch marks (striae) which are long linear, and in general parallel lesions, resulting from the rupture of collagen fibers and elastin; arise in opposition to the lines of skin tension. The exact cause is unknown. It is considered the association of hormonal factors, particularly the action of adrenocortical estrogen and placental estrogen with tissular connective stress<sup>(3)</sup>. They appear between the sixth and seventh months of pregnancy, and in approximately 90% of pregnant women<sup>(3,6)</sup>. They may manifest as a result of racial and genetic predisposition<sup>(3)</sup>. Are more frequent in Caucasian women, and the most affected areas are the abdomen, breasts, arms and back<sup>(4)</sup>. In this study, our data indicated the abdomen as the area most affected, followed by the buttocks. The fair-skinned women predominated in the sample, however it was not investigated the relationship between skin color and stretch marks.

A study on the prevalence of stretch marks in primiparae women found 52% of women (n = 309) with striations and these were classified as mild, moderate and severe, predominantly the first one. Of the 17 analyzed variables, four were significantly associated with the presence of stretch marks: maternal age, body mass index, maternal weight gain and baby's weight at birth, maternal age being the variable of greatest risk<sup>(18)</sup>. Similar results were found in a study of primigravid Iranian women<sup>(19)</sup>.

Stretch marks do not completely involute, they can expand at the end of pregnancy evolving to a white-pearl fainter aspect<sup>(4)</sup>. It should be emphasized that despite the technological progress in the areas of esthetics and cosmetology, the results of treatments for stretch marks are still unsatisfactory<sup>(8)</sup>. Weight control during pregnancy is the best recommendation to be given by professionals.

The acne, mentioned by several women in this study, is a process that destabilizes the pilosebaceous unit<sup>(20,21)</sup>. The high prevalence of the acne is the major cause of visits to the dermatologist according to the census of the Brazilian Dermatology<sup>(11)</sup>. It affects a large number of adolescents and young adults at some stage of their lives, with variable severity according to age and cause. The origin of acne is multifactorial. During pregnancy, the sebaceous secretion tends to increase during the last trimester of pregnancy, a period in which the estrogens,

which suppress the sebaceous activity, are increased. It is believed that the stimulating factor comes from the pituitary gland (hypophysis). During lactation, the secretion stimulates prolactin secretion, which can directly stimulate the sebaceous glands or increase their response to androgens<sup>(6)</sup>. With the increase in sebaceous gland activity, worsening of acne would be expected during pregnancy, however, the result was totally unpredictable<sup>(14)</sup>. The patient may develop acne for the first time, as well as it may aggravate pre-existing acne due to hormonal influence by environmental factors. In general, there is a picture of moderate acne.

The effect of pregnancy on acne has not been widely reviewed and studies are controversial. Some authors report improvement of acne with pregnancy, others a worsening<sup>(8)</sup>. In this study, we found only one pregnant woman who reported improvement in acne.

For prevention and treatment of acne, it is necessary to act in several causal factors. It is essential to consider hygiene of the skin, but not excessively, in order not to irritate the skin: to adjust the soaps pH, avoiding the more alkaline, selecting less comedogenic topical products and applying drugs only when prescribed by specialist doctors. The combination of different drugs may also be recommended<sup>(22)</sup>. During pregnancy, the latter behavior makes the problem more relevant in view of the contraindication of more effective drugs such as tretinoin and isotretinoin in pregnancy. These teratogenic drugs have been rather widespread in the recent years. Its use in women of childbearing age requires strict control to prevent pregnancy<sup>(23)</sup>.

Hair changes were mentioned by a less number of women. The results of this study showed a greater frequency in of hair loss alteration related to the increase, diverging from the literature on this subject. Hirsutism is common, particularly in women who already had too much hair before pregnancy. It is commonly observed early in pregnancy, more pronounced on the face and arms. The etiology is probably hormonal. Generally, it disappears within six months after delivery and does not require any specific therapy<sup>(3-4,13)</sup>. The increase in hair occurs because during pregnancy there is an improvement in the amount of anagen hairs (growing phase) and a decrease in elimination of hair, which continue its development until childbirth. After delivery, there is a telogen effluvium which will increase the loss of terminal hairs from one to five months after childbirth, lasting up to one year. The decline is reversible, but can cause significant psychological changes in women during the postpartum period. In rare cases, in advanced pregnancy, baldness of male pattern or diffused thinning of the scalp can be observed. Both conditions tend to revert to the normal pattern of growth after childbirth<sup>(6)</sup>.

There are several options to treat hirsutism: shaving, waxing, electrolysis and laser hair removal. The treatment using laser has become very popular and effective in recent years, however it is the opinion of dermatologists to adopt a conservative approach and to postpone the treatment for postpartum because the effects of laser during pregnancy has not been definitively determined<sup>(8)</sup>.

Weak nails were also mentioned by these women. The literature on this subject is scarce; some authors bring as occurrence weakness of the ungueal plate, distal onycholysis (separation of the ungueal plate of the distal half) and also accelerated growth of the nails. The relationship of these changes with pregnancy is still unknown<sup>(3,6)</sup>.

The less mentioned skin changes are edema, dry skin, shiny skin and acne decrease. Peripheral edema is reported in the literature as one of the most common and long-lasting manifestations in pregnant women<sup>(4)</sup>. Few reports might be related to the fact that women do not consider it as a skin change. The dry skin can be a result from warm and frequent baths, use of soaps with alkaline pH directly applied to the skin and also low fluid intake. Shiny skin might be related to increase in activity of the sebaceous gland during pregnancy. No studies were found on the literature on this subject. Regarding acne reduction, there are reports of improvement in pregnancy, as already mentioned.

Regarding the 11 women who did not observe any changes in their skin, it is relevant to emphasize that six of them were close to the transition period from first to second quarter. Only one woman has completed the period of 40 weeks without noticing any change in her skin.

Most patients said to be upset with the skin changes during pregnancy. A number of women declared to be very disturbed. This result can be understood in light of cultural constructions regarding behavior and beauty of the female body. These constructions involve the different cycles of life, including pregnancy and are supported by a series of processes promoted by the media and institutions, intentionally or not, which prescribe models to be followed.

One study analyzed the speeches of the Parents and Children magazine regarding body and pregnancy. The author emphasizes that the magazine figures out the image

of a calmly, well- treated pregnant woman without any marks, and associates the course of pregnancy and the ways that the body s configures the forever beautiful myth<sup>(24)</sup>.

The discomfort, cited by the majority of pregnant women, resulting from the idealized skin versus real skin can become a significant stress agent, affecting self-esteem and quality of life. Dissatisfaction with skin can also lead to the search of solutions or inadequate treatment, exacerbating the existing problem.

Recent research has sought to identify the visible aspect of skin lesions, that is, the location of the lesion, interfering with quality of life of patients. The results showed that regardless site of the location of the lesion; the feeling of exposure, embarrassment and damage that patient is subject to be similar, because in the close contact with another person some exposure is involved<sup>(25)</sup>. Although the authors deal with dermatopathies, similarities, regarding the psychological impact, these could be attributed to physiological changes. Negative feelings such as sadness, shame, fear, anger, and behavioral changes, as social isolation might be associated to physiological responses of the skin.

The minority of pregnant women in this study do not considered the changes in the skin as a problem. Similar findings were observed in a study on body changes in pregnant adolescents. The authors suggest that satisfaction with one's own body is possibly due to the importance given to motherhood<sup>(26)</sup>. This aspect was not explored in this study.

## CONCLUSIONS

Despite sample limitations, this study allowed to indicate the number of skin changes that occurred during pregnancy and the different levels of discomfort. As per the results, it is understood that the conduct of assistance and educational activities performed by health professionals should value this problem. The use of a standardized protocol to treat potential and real problems could be a contribution.

Further studies are needed to explore and discuss this subject, including the impact of skin changes in the lives of pregnant women.

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