Acne Vulgaris in Pregnancy: An Epidemiological, Clinical and Psychological Study in Ouagadougou, Burkina Faso

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ABSTRACT

Introduction: Acne vulgaris is a fairly common condition. Although predominant in adolescents, it affects an increasing number of adults. The study aimed to evaluate the prevalence, clinical, and psychological aspects of acne in pregnant women in Ouagadougou, Burkina Faso.

Materials and method: This cross-sectional study was carried out in 7 health facilities in the City of Ouagadougou between January and July 2019. All pregnant women attending the antenatal clinics during the study period in the above healthcare facilities and who agreed to participate were included.

Results: A total of 383 pregnant women were included in this study. The mean age was 27.6 years. The overall prevalence of acne was 48.53%. More than half of the patients had a history of acne (55.80%). Papulopustular lesions were the most commonly seen lesions, located on the cheeks (81.22%), forehead (66.30%) and temples (37.57%). The average overall Echelle de Cotation des Lésions d'Acné (ECLA) severity score was 6.24 ± 3.94 (range 2–21). Most patients (91.71%) had mild to moderate acne. Severe forms were observed in the second trimester of pregnancy, more frequently in patients aged >24 years. The average Cardiff Acne Disability Index (CADI) score for the psychosocial impact of acne was 10.20 ± 2.16. Pharmacologic treatment was declined by 82.87% of pregnant women, who preferred so-called "natural" products. Skin-lightening products such as hydroquinone and corticoids were used by 19.89% of the women.

Conclusion: Although acne affected 1 in every 2 pregnant women in this study, mild or moderately severe inflammatory acne during pregnancy did not greatly affect their quality of life. Acne was better accepted by those women who did not wish to receive pharmacologic treatment during pregnancy.

Keywords: Inflammatory acne, pregnancy, quality of life, ECLA severity Scoring, CADI score

Acné au cours de la grossesse : Aspects épidémiologiques, cliniques et psychologiques à Ouagadougou, Burkina Faso

Introduction: L'acné vulgaire est une affection assez courante. Bien que prédominante chez les adolescents, elle touche un nombre croissant d'adultes. L'étude visait à évaluer la prévalence, les aspects cliniques et psychologiques de l'acné chez la femme enceinte à Ouagadougou, au Burkina Faso.

Matériel et méthode: Cette étude transversale a été réalisée dans 7 établissements de santé de la ville de Ouagadougou entre janvier et juillet 2019. Toutes les femmes enceintes qui ont fréquenté les consultations prénatales pendant la période d'étude dans les dits établissements de santé et qui ont accepté d'y participer ont été incluses. Les scores de cotation de sévérité de l'acné ECLA et de retentissement psychologique CADI (Cardiff Acne Disability Index) ont été utilisés.

Résultats: Au total, 383 femmes enceintes ont été incluses dans cette étude. L'âge moyen était de 27,6 ans. La prévalence globale de l'acné était de 48,53%. Plus de la moitié des patients avaient des antécédents d'acné (55,80%). Les lésions papulo-pustuleuses étaient les lésions les plus fréquemment observées, situées sur les joues (81,22 %), le front (66,30 %) et les tempes (37,57 %). Le score global moyen de gravité de l'échelle de cotation des

lésions d'acné (ECLA) était de 6,24 ± 3,94 (intervalle de 2 à 21). La plupart des patients (91,71%) présentaient une acné légère à modérée. Des formes sévères ont été observées au cours du deuxième trimestre de la grossesse, plus fréquemment chez les patientes âgées de plus 24 ans. Le score moyen (CADI) était de 10,20 ± 2,16. Le traitement pharmacologique proposé a été refusé par 82,87% des femmes enceintes, qui préféraient des produits dits « naturels ». Les produits éclaircissants pour la peau tels que l'hydroquinone et les corticoïdes étaient utilisés par 19,89% des femmes.

Conclusion: Bien que l'acné ait touché 1 femme enceinte sur 2 dans cette étude, l'acné inflammatoire légère ou modérément sévère pendant la grossesse n'a pas beaucoup affecté leur qualité de vie. L'acné était mieux acceptée par les femmes enceintes qui ne souhaitaient pas recevoir de traitement pharmacologique pendant la grossesse.

Mots-clés: Acné inflammatoire, grossesse, qualité de vie, score de sévérité ECLA, score CADI

Introduction

Acne vulgaris, a chronic inflammation of the pilosebaceous unit is a fairly common condition. Although predominant in adolescents, it affects an increasing number of adults.[1,2,3] In pregnant women, the hormonal and metabolic disruptions associated with pregnancy can have an impact on the skin[4,5]. The hormone peak profoundly disrupts progesterone and estrogen secretion, modifying sebum secretion and the balance of the skin.[4] The excess sebum tends to block the pores, promoting the development of inflammatory lesions and/or open comedones, in particular of the face and back.[4,5,6]

This study evaluated the epidemiological, clinical, psychological, and therapeutic aspects of acne in pregnant women in the capital, Ouagadougou.

Materials and methods

This was a descriptive cross-sectional study carried out from January to July 2019 in the Obstetrics and Gynecology departments and Maternity units of 7 health facilities at 3 different levels of the health services pyramid in the city of Ouagadougou. These institutions were:

— the Obstetrics and Gynecology departments of Yalgado Ouédraogo University Hospital Center (CHU-YO) and Bogodogo University Hospital Center, for the tertiary level of the health services pyramid

— the Obstetrics and Gynecology departments of Boulmiougou District Hospital and the Hôpital Saint Camille de Ouagadougou (HOSCO), for the intermediate level

— the Maternity units of Pogbi, Gounghin, and Samandin (formerly Yennenga), for the peripheral level.

The sample was obtained by cross-sectional sampling. To determine sample size, we took as the study population the number of pregnancies expected in 2017 in the city of Ouagadougou (N_0 = 109 267) and a prevalence of acne during pregnancy of 50% [7]. The total sample size was calculated using the formula $n_0 = [t^2.P.Q] / e^2$, where n_0 = the total number of pregnant women needed for the sample, e = 5% or 0.05 (level of precision), t = 1.96 (statistic corresponding to e), P = 42% or 0.42 (prevalence of acne during pregnancy in France), and Q = 1-P = 0.58. The total number of pregnancies expected in the regions covered by the centers being known (N_0), n_o was corrected by $n_{o\ corrected} = n_o / [1+ (n_0-1/N_0)]$. This gave a total sample size of n_0 = 383, with n_0 representing the total size of the sample in the various health centers targeted for our study and N_T the total number of pregnant women seen in antenatal consultations in 2018. The numbers of pregnant women seen in the various healthcare facilities were obtained from the official database of the Ministry of Health, ENDOSS. With N_T = 25 153, we calculated the factor of proportionality k, $k = n_0 / N_T = 0.0152$. This yielded $n_i = 0.0152 \times N_i$, where n_i is the size of the respective samples of the healthcare facilities, and N_i is the number of pregnant women seen in the respective antenatal consultations of the healthcare facilities.

Using the formula $n_i = 0.0152 \times N_i$, we enrolled 29 pregnant women at CHU-YO, 25 at Bogodogo, 95 at HOSCO, 60 at Boulmiougou District Hospital, 52 at Pogbi maternity unit, 55 at Gounghin maternity unit and 67 at Samandin maternity unit. All pregnant women with or without acne, irrespective of their ages or stage of pregnancy, who attended an antenatal consultation or were seen during our study period in one of the participating healthcare facilities and who gave their written informed consent, were included in

this study. The women were enrolled sequentially in the participating healthcare facilities until the respective sample sizes had been reached. The procedures followed the Helsinki Declaration of 1975, as revised in 2008.

The data were analyzed using EPI-info version 7 software. Chi-squared test was used for comparative analysis, and the *p value* for significance with a threshold of 95%.

Acne severity was determined using an acne lesion scoring scale (Echelle de Cotation des Lésions d'Acné, ECLA). This scale is composed of 3 factors:

— factor 1 (F1), scored from 0 to 5 evaluating the type and severity of facial acne, (existence of comedones, pustules, papules, nodules, and inflammatory cysts on the face)

— factor 2 (F2), score from 0 to 3 evaluating the extension and severity of acne on the neck, chest, and back

— factor 3 (F3), score from 0 to 1, evaluating the presence or absence of scarring.[9,12]

The quality of life of the women with acne was assessed using the Cardiff Acne Disability Index questionnaire (CADI) validated in French.[12] This questionnaire consists of 5 items that assess the impact of acne on mood (item 1), the impact of acne on social relationships (item 2), avoidance and withdrawal behaviors (item 3), feelings of anxiety (item 4), and overall perception of acne (item 5). The response to each item is scored from 0 to 3, with a total maximum score of 15 and a higher score indicating a greater impact of acne.[9,10,12] Ministry of Health authorization was obtained for the study. Data were collected confidentially and anonymized.

Results

During the study period, 383 pregnant women were enrolled from the 7 healthcare facilities. A total of 181 (48.53%) pregnant women had acne. Their mean age was 27.6 ± 5.36 years (range 16–42 years). The mean age of pregnant women with acne was 26.97 ± 5.16 years. The majority of women with acne were aged >24 years (67.96%). Acne vulgaris was found in 22.10% of women in the first trimester of pregnancy, 41.99% in the second, and 35.91% in the third.

Women who worked in the informal sector accounted for 27.07% of those with acne, 25.41% were housewives, and 28.73% were pupils or students; while 81.21% had no fixed income. Public sector employees accounted for 13.81% and private sector employees 4.97%. A total of 55.80% of pregnant women with acne and 28.65% of pregnant women without acne had a previous history of acne whereas 44.2% of pregnant women with acne and 71.35% of pregnant women without acne did not (Figure 1) A previous history of acne was significantly more frequent in subjects with acne in pregnancy compared to those without acne ($P < 0.001$).

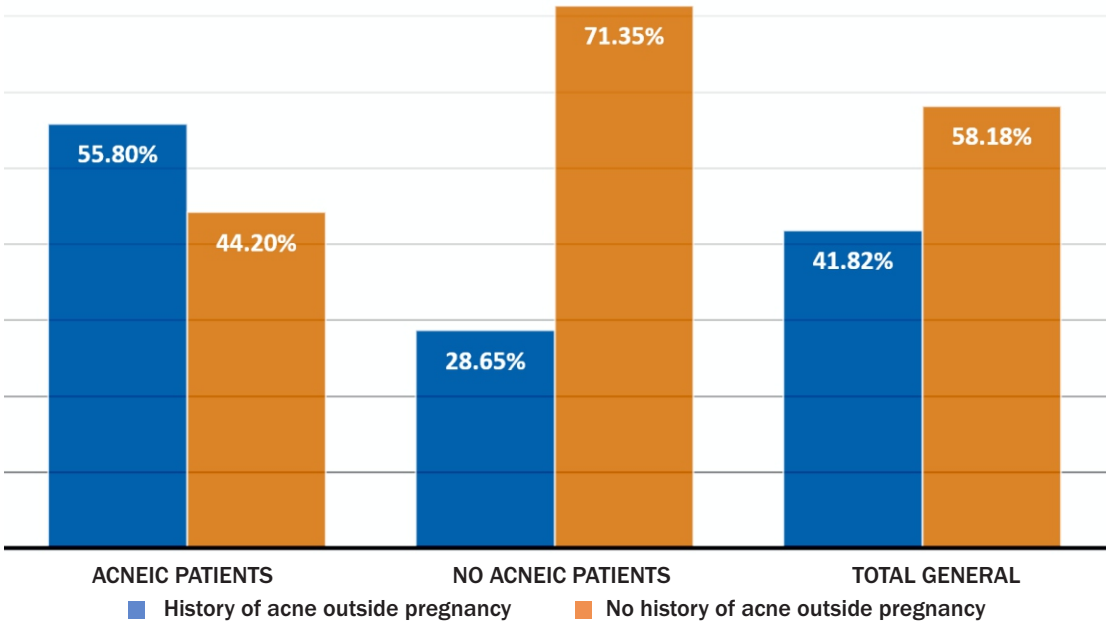

Figure 1: Distribution of Patients Based on History of Acne (P < 0.001)

Acne had developed during adolescence in 80.1% of women. There was no family history of acne in 69.61%. There were 238 multigravida women in this cohort (women with at least two pregnancies). Among the multigravida women with acne, 53.21% had acne in their previous pregnancy, while only 19.38% of those without acne had acne in their previous pregnancy. There was a statistically significant difference in the frequency of acne in pregnancy in multi-gestational patients with a history of acne in pregnancy and the primigravida (p-value < 0.0001) (Table 1).

Table 1: Distribution of History of Acne in Multigravida Women

History of acne during a previous pregnancy	**Multigravida women with acne % (n)**	**Multigravida women without acne %(n)**
Yes	53.21 (58)	19.38(25)
No	46.79(51)	80.62(104)
Total	100(109)	100(129)

The current clinical presentation of acne was characterized by inflammatory lesions (Figure 2) (86.74%), while 9.39% of patients had mixed acne and 3.87% had comedonal acne (figure 3). The lesions observed were papules (87.29%), followed by hyperpigmented cicatricial macules (51.38%), pustules (38.12%), comedones (49.17%), nodules (20.44%) and cysts (11.60%). The lesions were located on the cheeks (81.22%), forehead (66.30%), temples (37.57%), chin (21.55%), between the eyebrows (3.87%), on the nose (2.76%) and the chest (14.36%).

Acne Severity

The mean overall ECLA score was 6.24 ± 3.94 (range 2–21). Mild to moderate acne accounted for 91.71% and severe acne was noted in 8.29% of the cohort. Acne was more severe in the second trimester (53.33%) and in women aged >24 years (69.28%) (Table 1). The mean F1 score (type of acne and severity of facial lesions) was 5.15 ± 3.11 (range 0–17). It was higher in the second trimester when 40% of all patients and 73.26% of those aged >24 years had more than 10 lesions (Table 1).

The mean F2 score for extra-facial lesions was 0.497 ± 1.377 (range 0–8). Factor 2 for severity of extra-facial acne showed that 62.50% of women in the second trimester and 66.88% of women aged >24 had more than 4 extra-facial lesions (Table 1). The mean F3 score for scarring was 0.59 ± 0.60 (range 0–3). Factor 3 for intensity of scarring was 100% for 3 types of scarring (atrophic scars, hypertrophic scars, post-inflammatory hyperpigmentation) in the first term of pregnancy and in women in the 20–24 years age group (Table 1).

Table 2: ECLA Scores for Acne Severity

Factor	**ECLA score Factor 1 (Severity of facial lesions) %**			**ECLA Score Factor 2 (Severity of extra-facial lesions) %**			**ECLA score factor 3 (Scarring) %**				**Global severity %**	
Items	Less than 5 lesions	5 to 9 lesions	10 or more lesions	Less than 2 lesions	2 to 4 lesions	4 or more lesions	No scarring	1 scar type [a]	2 scar types	3 scar types	Mild to moderate acne	Severe acne
Term of pregnancy												
1st	29.07	3.75	26.67	23.57	18.75	0.00	21.43	20.45	37.50	100	22.29	20.00
2nd	38.37	46.25	40.00	41.40	37.50	62.50	42.86	42.05	37.50	0.00	40.96	53.33
3rd	32.56	40.00	33.33	35.03	43.75	37.50	35.71	37.50	25.00	0.00	36.75%	26.67
Age group (years)												
<20	6.67	13.75	10.47	25.00	6.25	11.46	13.10	10.23	12.50	0.00	13.33	11.45
20–24	26.67	23.75	16.28	0.00	18.75	21.66	17.86	19.32	50.00	100	33.33	19.28
>24	66.67	62.50	73.26	75.00	75.00	66.88	69.05	70.45	37.50	0.00	53.33	69.28

Table 3: Impact of Acne on Patients' Quality of Life Evaluation By CADI

CADI items	CADI 1 Impact of acne on mood				CADI 2 Impact on social relationships				CADI 3 Avoidance and isolation behaviours				CADI 4 Feelings of anxiety				CADI 5 Overall perception of acne		
Item citation	a-%	b-%	c-%	d-%	a-%	b -%	c- %	d-%	a-%	b- %	c- %	d- %	a- %	b- %	c- %	d-%	a- %	b- %	c - %	d- %
Overall score %	0	27.6	33.1	39.2	0	27.1	32.6	40.3	0	19.9%	40.3	39,8	0	21.00	42.5	36.5	0	29.3	40.9	29.9
Item by age range																				
<20 years	0	26	32	42	0	15.79	42.11	42.11	0	10,53	52,63	36,84	0	10.53	52.63	36.84	0	21.05	42.11	36.84
20–24 years	0	28	37	35	0	23.91	32.61	43.48	0	8,70	41,30	50,00	0	10.87	41.30	47.82	0	26.09	43.48	30.43
>24 years	0	25	32	43	0	25	32	38.79	0	25,86	37,93	36,21	0	16.72	37.93	41.89	0	27.59	39.66	31.90

Keys:

CADI 1: a – considerably, b – severe, c – slightly ; d – none;

CADI 2: a – considerably, b – moderate, c – occasionally ; d – none

CADI 3: a – all the time, b – most of the time, c – occasionally; d – not at all;

CADI 4: a – anxiety, b – permanent anxiety, c – occasional anxiety; d – not anxiety;

CADI 5: a – devastating problem, b – major problem, c – minor problem; d – not a problem

Psychological Impact of Acne Vulgaris on Pregnant Women

The mean CADI score was 10.20 ± 2.16 (range 0–15). The mean values of the various items, each scored from 0 to 3, were as follows: item 1 (impact of acne on mood) 2.11 ± 0.81, item 2 (impact on social relationships) 2.06 ± 0.86, item 3 (avoidance and isolation behaviours) 2.19 ± 0.74, item 4 (feelings of anxiety) 1.90 ± 0.90, item 5 (overall perception of acne) 1.92 ± 0.81.

Acne had no impact on mood in 39.2% of pregnant women with acne, a slight impact in 33.1%, and a major impact in 27.6%. The mood of 28% of women aged 20–24 years was severely affected by acne (Table 2). Item 2 of the CADI score showed that acne did not affect social relationships for 40.3% of pregnant women and affected them only occasionally for 32.6%, a total of 72.9%. The social relationships of women aged >24 years were moderately affected by acne for 25% and slightly affected for 32% (Table 2).

In the domain of avoidance and isolation behaviours (CADI item 3), 40.3% of women were not at all affected, and 32.6% only occasionally, a total of 72.9%. Women aged over 20 were the most affected (25.86%).

In the domain of feeling of anxiety caused by acne (CADI item 4), 42.5% of women experienced no anxiety and 36.5% occasional anxiety, a total of 79%. Acne caused permanent anxiety in 21% of women and 16.72% of women aged >24 years (Table 2).

In the domain of patient's overall perception of their acne (CADI item 5), for 29.9% of pregnant women it was not a problem while for 40.9% it was only a minor problem, a total of 70.8%. On the other hand, 27.59% of pregnant women aged >24 years saw their acne as a major problem (Table 2).

Treatment

Concerning acne treatment, the majority (82.8%) of pregnant women with acne declined the topical treatment with benzoyl peroxide and erythromycin that were offered, while 17.13% (31 women) accepted. Eight of the 31 women who accepted pharmacologic treatment adhered to it, including 2 with severe acne. Nearly one-fifth (19.89%) of pregnant women with acne used skin-lightening products containing hydroquinone or corticosteroids.

Discussion

In this study, nearly half (48.53%) of pregnant women were affected by acne vulgaris. This is similar to the 42.3% observed by Dréno et al. in their study of 378 patients in France in 2014.[7] However, Kumari et al. in India reported only 15 cases of acne in 607 pregnant women.[13] The mean age of the pregnant women with acne was 26.97 ± 5.16 years. The frequency of acne was highest in pregnant women aged >24 years (67.96%). The high frequency in this age group could be explained by the predominantly young population in the country which is also reflected in the young age of women getting into marriages which is enhanced by cultural factors seen typically in the African setting. Yang et al. reported a mean age of 28.5 years and Dréno et al. of 29.8 ± 4.8 years, where 10.9% of women were aged between 18 and 24 years and 89.1% were older (>24 years).[7,8]

Acne in pregnancy was seen most predominantly in the second trimester (41.99%). In the cultural context of Burkina Faso, women generally wait until the second trimester, when the pregnancy is visible, before registering for ante-natal care, evident in the higher number of patients in the second semester. Few pregnant women consult in the first trimester. Moreover, hormone levels are higher during the second trimester. Yang et al. reported a woman aged 32 years without facial acne before pregnancy experienced her first episode of acne during the second trimester.[8]

Among the pregnant women with acne, 55.80% had a history of acne while 28.65% did not. A large proportion of pregnant women with acne had a history of acne from adolescence (80.20%) while 17.82% had acne as adults (age 20–24 years). A previous history of acne was significantly more frequent in subjects with acne in pregnancy compared to ($P < 0.001$). Acne in a previous pregnancy was documented in 53.21% of the 109 multigravida women with acne, while 19.38% did not report acne in a previous pregnancy. There was also a statistically significant correlation between the onset of acne during the current pregnancy and a history of acne during a previous pregnancy ($P < 0.0001$). This shows

that acne during pregnancy generally occurs in women with a previous history of acne at puberty or in a previous pregnancy.

Awan and Lu also reported that women with a history of acne during puberty or in adulthood had a greater risk of acne during a new pregnancy.[14] Dréno et al. observed that 86.6% of pregnant women with acne had previously been affected by the condition and that 65.9% of multigravida women reported episodes of acne during previous pregnancies.[7] A history of acne is therefore a predisposing factor to acne in current pregnancy.

In this study, facial lesions were observed in the majority of the patients with acne. Yang et al. made similar findings, observing lesions on the cheeks (62.9%), the perioral and mandibular region (37.1%), the forehead (31.4%), and the nose (25.7%).[8] Dréno observed that 35.2% of women had only facial lesions, while 69.1% had lesions on the jaw, 15.7% on the cheeks, and 14.4% on the forehead.[7] Acne was predominantly inflammatory (86.74%) in our series, as in the study by Dréno et al.[7]

The majority of pregnant women in our study had mild to moderate acne (91.71%) while 8.29% had severe acne. Severe acne affected more women in the second trimester (53.33%) and 69.28% of women aged over 24 years. The mean overall ECLA severity score was 6.24. Yang et al. also reported more severe acne in the second trimester and a mean ECLA score of 4.2.[8]

The majority of pregnant women with acne declined the medical treatment that was offered, believing that their acne would clear after the birth or preferred the use of "natural" products such as green clay, honey, or lemon, or cosmetics containing these. Moreover, 19.89% of women used skin-lightening products based on hydroquinone and corticosteroids, which can affect the fetus and result in lower birthweight.[15,16] Benzoyl peroxide and erythromycin applied topically to the inflammatory lesions of 6 pregnant women with mild to moderate acne were effective within a month. The use of medications such as topical steroids, systemic isotretinoin, anti-androgens, or cyclin antibiotics was avoided amongst pregnant women due to their potential teratogenic effect on the fetus.[17,18,19] Zinc salts can be used in pregnancy but are not commonly prescribed in our setting.[15,16,20] Overall, there was a clear lack of interest in the majority of pregnant women in taking oral acne medications.

Overall, acne had a low to moderate impact in our cohort. In most pregnant women, it was mild to moderate and the majority did not wish for treatment. Overall, for 69.9% of women acne was not seen as a problem in daily life, or only a minor one.[21] Nevertheless, avoidance behavior and withdrawal were observed in 25.86% of women aged >24 years. The visibility and aesthetically displeasing nature of acne could explain its negative impact on the quality of life in women.[9,10,21]

Conclusion

Inflammatory acne with facial lesions was the predominant presentation seen in our study population. In most cases acne was mild to moderate, developed in the second trimester of pregnancy, and was more frequent in patients aged >24 years. Overall, the impact of acne on the women's quality of life was low and they did not wish for treatment, but some women used skin-lightening cosmetic products that could be harmful to the fetus.

REFERENCES

1. Tan A, Schlosser B, Paller A. A review of diagnosis and treatment of acne in adult female patients. *Int J Womens Dermatol* 2018;4(2):56–71.
2. Rocha MA, Bagatin E. Adult-onset acne: prevalence, impact, and management challenges. *Clin Cosmet Investig Dermatol* 2018;11: 59–69.
3. Dréno B. Treatment of adult female acne: a new challenge. *J Eur Acad Dermatol Venereol* 2015;29(5):14–9.
4. Dréno B. Physiopathologie de l'acné. *Presse Med* 2005;34(7):537–539.
5. Motosko CC, Bieber AK, Pomeranz MK, Stein JA, Martires KJ. Physiologic changes of pregnancy: A review of the literature. *Int J Womens Dermatol* 2017;3(4):219–224.
6. Dréno B, Blouin E. Acné de la femme enceinte et sels de zinc : revue de la littérature. *Ann Dermatol Venereol* 2008;135(1):27–33.
7. Dréno B, Blouin E, Moyse D, Bodokh I, Knol A, Khammari A. Acne in pregnant women: A

French survey. *Acta Derm Venereol* 2014;94(1):82–83.

8. Yang C, Huang Y, Yu C, Wu M, Hsu C, Chen W. Inflammatory facial acne during uncomplicated pregnancy and post-partum in adult women: a preliminary hospital-based prospective observational study of 35 cases from Taiwan. *J Eur Acad Dermatol Venereol* 2016;30(10):1787–1789.
9. Dréno B, Alirezai M, Auffret N, Beylot C, Chivot M, Daniel F, et al. Corrélation clinique et psychologique dans l'acné: utilisation des grilles ECLA et CADI. *Ann Dermatol Venereol* 2007;134(5):451–455.
10. Ouédraogo NA, Tapsoba G, Ouédraogo M, Ouédraogo/Kabré S, Traoré F, Some/Korsaga N, et al. Acné et qualité de vie des élèves à Ouagadougou (Burkina Faso). *IJIAS* 2017;20(1):187–194.
11. Kamamoto C de S, Hassun K, Bagatin E, Tomimori J. Questionnaire sur la qualité de vie spécifique à l'acné (Acne-QoL): traduction, adaptation culturelle et validation en portugais brésilien. *An Bras Dermatol* 2014;89(1):83–90.
12. Dreno B, Finlay AY, Nocera T, et al. The Cardiff Acne Disability Index: cultural and linguistic validation in French. *Dermatology* 2004;208:104–108
13. Kumari R, Jaisankar T, Thappa D. A clinical study of skin changes in pregnancy. *Indian J Dermatol Venereol Leprol* 2007;73:141.
14. Awan S, Lu J. Management of severe acne during pregnancy: A case report and review of the literature. *Int J Womens Dermatol* 2017;3(3):145–150.
15. Chien A, Qi J, Rainer B, Sachs D, Helfrich Y. Treatment of acne in pregnancy. *J Am Board Fam Med* 2016;29(2):254–262.
16. Malo J, Boulanger S. Le traitement de l'acné chez la femme enceinte ou qui allaite. *Québec Pharmacie* 2006;53(7):381–386
17. Vexiau P, Chivot M. Acné féminine : maladie dermatologique ou maladie endocrinienne ? *Gynécol Obstét Fertil* 2002;30(1):11-21.
18. Zobiri S, Hammadi H. Acné de la femme adulte. *Santé Magazine* 2017;(69):2–5.
19. Husein H. Management of acne vulgaris with hormonal therapies in adult female patients. *Dermatol Ther* 2015;28(3):166–172.
20. Stéphan F, Revuz J. Les sels de zinc en dermatologie. *Ann Dermatol Venereol* 2004;131:455–456.
21. Féton-Danou F. Impact psychologique de l'acné. *Ann Dermatol Venereol* 2010;137:1619.

Figure 2: Comedonal moderate acne

Figure 3: Severe nodular acne

SUPPLEMENTARY DATA

APPENDIX:

Scores used in the study

The ECLA (Acne Lesion Rating Scale) was chosen to assess the severity of acne in pregnant women in the study [9,12].

ECLA: the severity assessment scale is made up of 3 factors: F1, F2, and F3.

Factor F1: On the one hand, it assesses the clinical variety of acne by distinguishing between the various types of elements:

- F1R retention lesions (closed and open comedones) ;
- Superficial inflammatory lesions F1Is (papules, pustules) ;
- Deep inflammatory lesions F1Ip (nodules: infiltrated lesions over 5 mm in diameter).

It also assesses the number of lesions on a qualitative scale in the context of an outpatient consultation:

0 = no lesions;
1 = rare;
2 = minimal;
3 = moderate;
4 = significant;
5 = very significant.

A semi-quantitative character was given to this factor.

Thus for superficial retentional and inflammatory lesions:

0 = no lesion;
1 = less than 5 lesions;
2 = 5 to 9 lesions;
3 = 10 to 15 lesions;
4 = 20 to 40 lesions;
5 = more than 40 lesions.

For deep inflammatory lesions, given their prognostic importance, the following semi-quantitative scale has been proposed:

0 = no lesion;
1 = one nodule;
2 = two nodules;
3 = three nodules;
4 = four nodules;
5 = five or more nodules.

Factor F2: This assesses the extent of lesions outside the face in 5 regions defined as:

- upper or lower cervical zone (F2C) ;
- chest (F2P) ;
- back above or below the shoulder blade (F2D) ;
- arms and shoulders (F2B).

On a qualitative scale:

0 = absent,
1 = slight,
2 = moderate,
3 = significant.

Factor F3: This assesses scarring:

- inflammatory (F3CI) ;
- non-inflammatory (F3CNI);
- excoriations (F3E).

According to a qualitative scale: 0 = absent, 1 = present

The total ECLA score obtained by adding the scores for the 3 factors is between 0 and 36. A score less than or equal to 12 represents mild to moderate acne, while a score greater than 12 represents severe acne.

The presentation of the ECLA grid is shown in the table below ***(see next page)***:

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CADI scoring

The Cardiff Acne Disability Index (CADI) is a short five-item questionnaire derived from the longer Acne Disability Index, measuring the quality of life in acne patients [9,12].

The CADI is designed for use in adolescents and adults with acne. It was chosen over other instruments because of its ease of administration, conciseness, accuracy, and specificity to acne. Item 3 of the French version was adapted for use in Burkina Faso.

The question in item 3: *"During the last month, have you avoided public changing rooms or wearing a swimming costume because of your acne pimples"* was replaced by the following: *"During the last month, have you avoided public places or group outings because of your acne pimples?"*

It comprises 5 items:

- Item 1 looks for the emotions felt, the impact of acne on mood
- Item 2 consists of detecting the impact of acne on

ECLA scoring presentation								
Factor 1 (F1): type and intensity of acne; full face count								
		Absent 0	Rare 1	slight 2	Moderate 3	Important 4	Very important 5	F1
F1	Open and closed comedones	None	<5	5 - 9	10 - 19	20 - 40	>40	R
	Papules pustules	None	<5	5 - 9	10 - 19	20 - 40	>40	Is
	Inflammatory nodules and cysts	none	1	2	3	4	5	Ip
Score F1 = … /15								
Factor 2 (F2): Extent and intensity of acne; excluding the face								
F2				0	1	2	3	
				Absent	Slight	Moderate	Important	F2
	Neck (C)	Upper cervical area						C
		Lower cervical area						
	Chest (P)							P
	Back (D)	Tip of the shoulder blade						D
		Subpoint of the shoulder blade						
	Upper arm (B)							B
Score F2 = … /18								
Factor 3 (F3) : scars absent = 0 ; present =1								
F3	Inflammatory scars CI		Not inflammatory CNI				Excoriations E	
Score F3 = … /3								
Score final = ScoreF1 + Score F2 + Score F3 = …./36								
The ECLA score is therefore between 0 and 36								

the patient's relationships;

- Item 3 looks for avoidance and isolation behaviours;
- Item 4 notes feelings of anxiety;
- Item 5 gives an idea of the overall perception of acne;

Item 1: Over the last month, because of your acne pimples, have you been aggressive, frustrated, or embarrassed?
a. *Considerably* / ***b.*** *A lot* / ***c.*** *A little* / ***d.*** *Not at all*

Item 2: In the last month, do you think your acne pimples have affected your daily life, your evenings out, or your relationship with your friend?
a. *Considerably, in all my activities* / ***b.*** *Moderately, in most of my activities* / ***c.*** *Occasionally, or only in certain activities* / ***d.*** *Not at all*

Item 3: In the last month, have you avoided public places or group outings because of your acne pimples? ***a.*** *All the time* ***b.*** *most of the time* ***c.*** *occasionally* ***d.*** *not at all*

Item 4: Over the last month, how do you feel about your skin? ***a.*** *Feeling of anxiety* / ***b.*** *Feeling worried all the time* / ***c.*** *Feeling worried occasionally* / ***d.*** *No anxiety*

Item 5: How do you feel about your acne today?
a. *A catastrophic problem* / ***b.*** *A major problem* / ***c.*** *A minor problem* / ***d.*** *Not a problem*

The score for each answer is as follows: an answer (a) is equivalent to 3 points, an answer (b) is equivalent to 2 points, an answer (c) is equivalent to 1 point, and an answer (d) is equivalent to 0 points.

The CADI score is then calculated by adding up the scores for each question.