

Acne during pregnancy — a cross-sectional study

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ABSTRACT

Introduction: *Acne vulgaris* is a common disease affecting pregnant women. This study aimed to broaden knowledge about the epidemiology of *acne vulgaris* during pregnancy and applied treatment methods.

Material and methods: The self-made questionnaire was fulfilled by 465 individuals from Poland and German-speaking countries.

Results: 81 (35.1%) women from German-speaking countries and 112 (47.9%) Poles reported that *acne vulgaris* was present before pregnancy ($p = 0.003$). Acne during pregnancy occurred among 110 (47.6%) individuals from German-speaking countries and 113 (48.3%) women from Poland. 40.9% ($n = 45$) individuals from German-speaking countries and 44.2% ($n = 50$) Poles considered their skin lesions as a big problem. However, only 5 (4.5%) women from German-speaking and 12 Poles (10.6%) ($p = 0.04$) decided to get the treatment during pregnancy.

Conclusions: More education is needed to encourage future mothers to treat this skin disease.

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Key words: acne, pregnancy, epidemiology

INTRODUCTION

Acne vulgaris is a common disease among teenagers, young adults and pregnant women. The pathophysiology of this disease is based on the excessive activation of sebaceous glands which is caused by immunological, metabolic and hormonal changes. Increased androgens levels during pregnancy can lead to dysfunction of sebaceous glands [1]. Inflammatory changes are caused by the prevalence response of T helper cells type II (Th2) over T helper cells type I (Th1). However, after the termination of pregnancy, it comes to the balance between Th1 and Th2 cells and in most cases, *acne vulgaris* is gone.

MATERIAL AND METHODS

This study aimed to broaden knowledge about the epidemiology of *acne vulgaris* during pregnancy and applied treatment methods. This was a cross-sectional online survey, conducted on a representative sample of individuals from Poland ($n = 234$) and German-speaking countries ($n = 231$). The survey was conducted using a self-made questionnaire consisting of 15 questions which was posted on Facebook groups related to pregnancy and parenting topics. Respondents were asked when acne occurred during pregnancy, in which trimesters it was present and in which it was the most severe, what treatment was applied and who prescribed it.

Statistical analysis was performed using the software Microsoft Excel and XLMiner Analysis ToolPak. The mean and SD were calculated. Differences between groups were determined using a t-test. Statistical significance was set at $p < 0.05$. The data were collected and analysed anonymously.

RESULTS

All participants in this study ($n = 465$) were female. 234 (50.3%) women were Poles and 231 (49.7%) women lived in German-speaking countries. Respondents from Poland were aged from 18 to 42 years (mean age = $28 \pm SD = 4.8$ years) and participants from German-speaking countries were aged from 19 to 44 years (mean age = $28 \pm SD = 5.4$ years). Most women from German-speaking countries ($n = 106$; 45.9%) lived in the village and most women from Poland ($n = 67$; 28.6%) lived in cities with more than 500 000 inhabitants (Fig. 1).

Most women from German-speaking countries ($n = 62$; 26.7%) as well as from Poland ($n = 59$, 25.2%) were not currently pregnant and their last delivery took place less than one year ago. Crucial groups of respondents in this study were also women who were pregnant for the first time during the third trimester ($n = 40$; 17.2% women from German-speaking countries, $n = 39$; 16.7% Poles) and second

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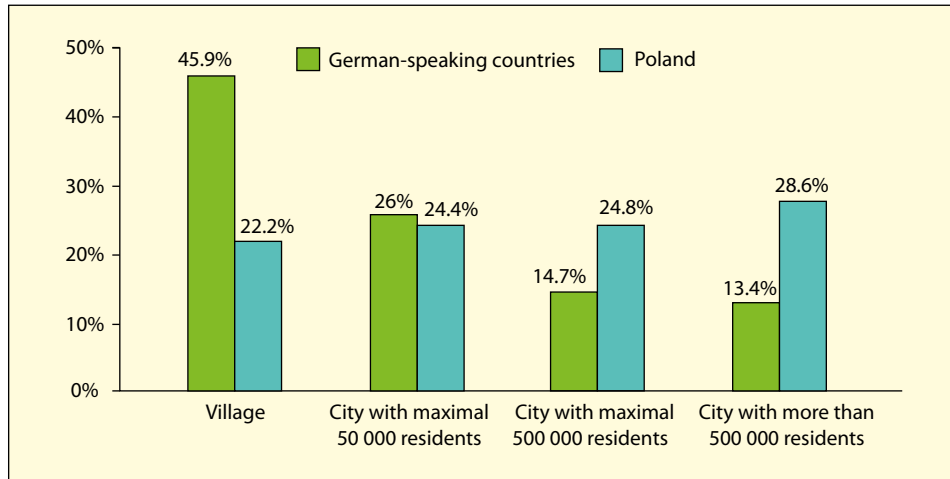


Figure 1. The demographic structure of respondents

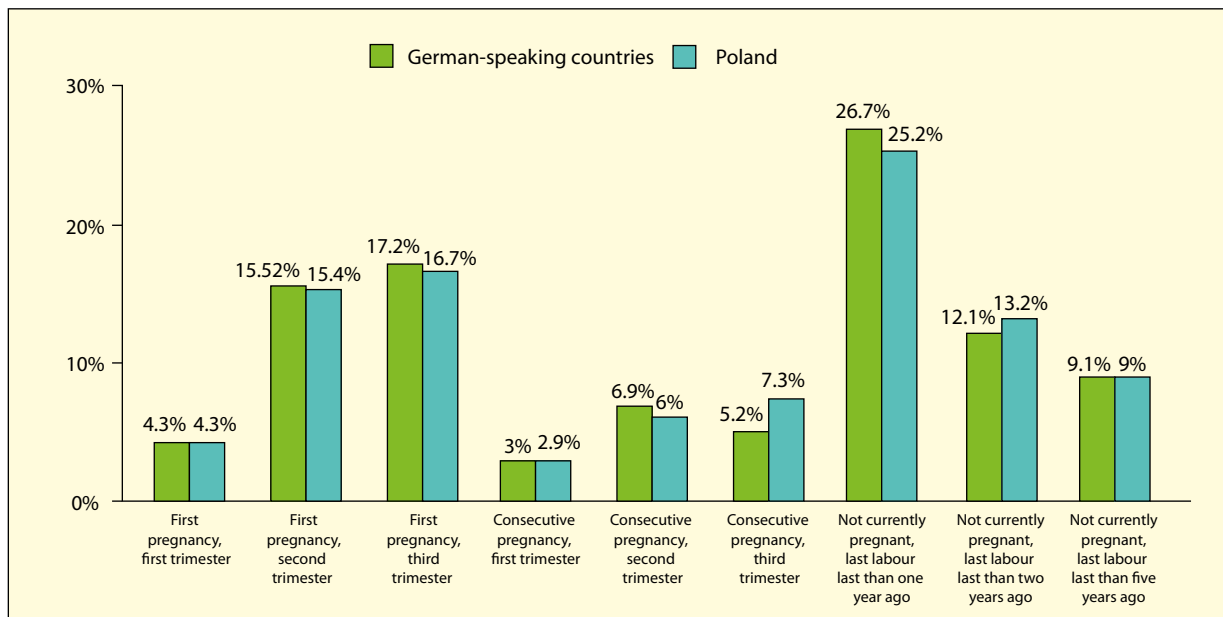


Figure 2. The number of past pregnancies and/or the trimester of the current one among respondents

trimester (n = 36; 15.5% women from German-speaking countries, n = 36; 15.4% Poles) (Fig. 2).

81 (35.1%) women from German-speaking countries and 112 (47.9%) Poles reported that *acne vulgaris* was present before pregnancy (p = 0.003). In this group, 21 (25.9%) women from German-speaking countries and 52 (46.4%) Poles (p = 0.001) decided to treat *acne vulgaris* with medical methods. The treatment included topical antibiotics, azelaic acid and benzoyl peroxide. The treatment was prescribed by a dermatologist for 9 (42.8%) women from German-speaking countries, by a doctor of another speciality for 8 (39%) women and 4 (18.2%) women decided to treat it with over-the-counter drugs (OTC). 41 (78.8%) women from Poland were treated by a dermatologist,

6 (11.5%) by a doctor of another speciality and 5 (9.7%) women chose over-the-counter drugs in the therapy of *acne vulgaris*.

Acne during pregnancy occurred among 110 (47.6%) individuals from German-speaking countries and 113 (48.3%) women from Poland (p = 0.4). In the group of women from German-speaking countries (n = 83, 75.5%) as well as in the group of Poles (n = 90, 79.6%) acne occurred mostly during the first trimester. 21.8% (n = 24) of women from German-speaking countries and 16.6% (n = 19) Poles reported that acne occurred during the second trimester. The rest of the respondents reported that acne occurred during the third trimester (n = 3, 2.7% women from German-speaking countries and n = 4, 3.6% women from Poland).

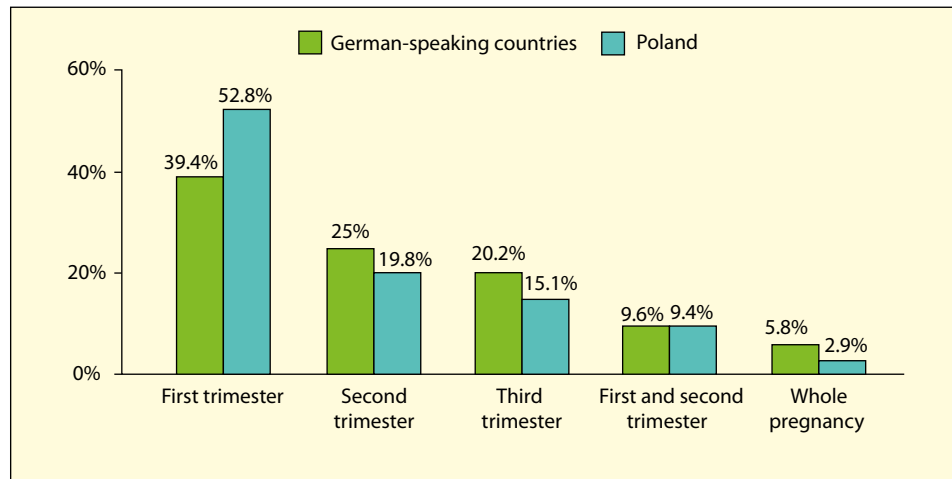


Figure 3. Assessment of severity of *acne vulgaris* during particular trimesters among respondents

35.4% (n = 39) of women from German-speaking countries and 35.3% (n = 40) Poles reported that acne was present during the whole pregnancy. 33.3% (n = 37) individuals from German-speaking countries reported that acne was present during the first and second trimesters, whereas 33.3% (n = 38) Poles and 18.2% (n = 20) women from German-speaking countries admitted that acne was present only during the first trimester. Few respondents reported that acne was present only during the second and third trimesters (n = 14; 13.1% women from German-speaking countries and n = 14; 12.7% Poles).

Most Poles (n = 60; 52.8%) and most women from German-speaking countries (n = 43; 39.4%) described that acne was most severe during the first trimester or only during the second trimester (n = 28; 25% of women from German-speaking countries; n = 22; 19.8% Poles). Only 6 (5.8%) individuals from German-speaking countries and 3 (2.9%) respondents from Poland admitted that acne was equally intense during the whole pregnancy (Fig. 3).

However, only 5 (4.5%) women from German-speaking and 12 Poles (10.6%) (p = 0.04) decided to get the treatment during pregnancy which included topical antibiotics, azelaic acid and benzoyl peroxide. Remedies for two women (40%) from German-speaking countries were prescribed by a dermatologist, for two patients (40%) treatment was administered by a doctor of another speciality and one woman (20%) chose an over-the-counter drug. Seven Poles (58.3%) visited a dermatologist who prescribed medication, four women (33.3%) visited a doctor of another speciality and one woman (8.4%) chose an over-the-counter drug.

Most patients (n = 73; 66.4% women from German-speaking countries and n = 54; 47.8% Poles) described their acne as more severe during pregnancy than before pregnancy. 19.1% (n = 21) of women from German-speaking countries and 30.1% (n = 34) Poles did not notice

any difference between the severity of their acne before and during pregnancy. Meanwhile, 14.5% (n = 16) individuals from German-speaking countries and 22.1% (n = 25) Poles reported that their acne was more intense before pregnancy.

40.9% (n = 45) individuals from German-speaking countries and 44.2% (n = 50) Poles considered their skin lesions as a big problem. 41.8% (n = 46) women from German-speaking countries and 41.6% (n = 47) Poles assessed their acne as a moderate problem and for 17.3% (n = 19) respondents from German-speaking countries and for 14.2% (n = 16) Poles acne is considered as a minor problem.

DISCUSSION

According to the present study, statistically, significantly more (112; 47.9%) Poles than women from German-speaking countries (81; 35.1%) (p = 0.003) reported that *acne vulgaris* was present before pregnancy. Moreover, *acne vulgaris* occurred among almost half of the respondents [n = 110; 47.6% women from German-speaking countries; n = 113 (48.3%) Poles (p = 0.4)] during pregnancy. This data well corresponds with Bechstein et al. [2] publication where the authors say that up to 42% of pregnant women suffered from acne.

Mostly, *acne vulgaris* occurred in the first trimester and lasted during the whole pregnancy (n = 39; 35.4% women from German-speaking countries; n = 40 (35.3%) Poles), during the first trimester [n = 20; 18.2% women from German-speaking countries; n = 38 (33.3%) Poles] or first and second trimester [n = 37; 33.3% women from German-speaking countries; n = 21 (18.6%) Poles].

The majority of women [n = 73; 66.4% women from German-speaking countries; n = 54 (47.8%) Poles] assessed that acne became more severe during pregnancy which is similar to data published by Bechstein et al. [2] where in the case of 60% women acne deteriorated during pregnan-

cy. The least respondents reported that acne is less intense during pregnancy than before pregnancy [n = 16; 14.5% women from German-speaking countries; n = 25 (22.1%) Poles]. However, according to Kutlu et al. [3] the prevalence of *acne vulgaris* before pregnancy does not influence the severity of acne during pregnancy. In the present study as well as in Kutlu's study the number of respondents is not big enough (465 vs. 295 women) [3] to bring clear conclusions, which is why more research in this field is needed, to precisely describe the epidemiology of acne during pregnancy.

Surprisingly, only 5 (4.5%) women from German-speaking countries and 12 (10.6%) Poles (p = 0.04) decided to apply the treatment during pregnancy. It could be related to fear of side effects of remedies which are used to treat *acne vulgaris*. However, on the market are available substances which are safe for the mother as well as for the foetus. Moreover, according to specialists *acne vulgaris* should be treated during pregnancy to avoid worsening it after the pregnancy and occurring scars or bacterial infections and to maintain the good physical condition of the mother [4].

Analysing the results of the present study, it is noticeable that Poles more often visit medical doctors and apply a medical treatment for *acne vulgaris* before pregnancy in comparison to women from German-speaking countries [n = 52 (46.4%) vs. n = 21 (25.9%), p = 0.001]. This difference is also statistically significant for pregnant women — 5 (4.5%) women from German-speaking and 12 Poles (10.6%) (p = 0.04) were seeking medical advice. Topical antibiotics, azelaic acid and benzoyl peroxide were the most often prescribed medication. According to the literature [4] the most advised treatment of *acne vulgaris* during pregnancy is:

- 15% and 20% azelaic acid,
- 2.5–5% benzoyl peroxide,
- 0.5–2% salicylic acid and
- topical antibiotics: erythromycin, azithromycin, clindamycin and metronidazole.

For mild acne authors [5] recommend topical azelaic acid or benzoyl peroxide as baseline therapy. For acne with inflammatory lesions, it is advised [5] to start with topical erythromycin or clindamycin with benzoyl peroxide. Moderate and severe acne should be treated with oral erythromycin and fulminant nodular cystic acne with a course of oral prednisolone after the first trimester [5]. However, in clinical practice, there is a lack of unified recommendations

and clinical studies in this population which results in the non-optimized treatment of *acne vulgaris* during pregnancy.

Azelaic acid is classified as a medication of category B according to the FDA (U.S. Food and Drug Administration) classification [5]. Erythromycin, clindamycin and azithromycin are also in this group [5]. However, benzoyl peroxide and salicylic acid are classified as category C medications according to FDA [5]. The most secure remedies for *acne vulgaris* during pregnancy are topical preparations [6], meanwhile, oral substances and phototherapy are considered second-line treatments [7].

It is crucial to emphasize that systemic tetracyclines and isotretinoin cannot be applied during pregnancy because of the high teratogen risk for the foetus [5]. Teratogen side effects of isotretinoin are well-known and that is why this substance is classified in category X according to FDA.

CONCLUSIONS

This research shows that *acne vulgaris* is a common and awkward problem among pregnant women. Many of them are afraid of the possible side effects of applied medication and that is why they do not visit specialists to treat acne. This fact emphasizes that education in this field is needed to avoid possible complications of *acne vulgaris* among mothers in the future.

Conflict of interest

The authors declare no conflict of interest.

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