

**PREVALENCE OF ADULT FEMALE ACNE IN COLOMBIA: A POPULATION-BASED STUDY**

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## **ABSTRACT**

**Background:** Acne is a common inflammatory skin disease, adolescents are the population most affected with this condition, however, it is a frequent condition in the adult population. Adult acne is defined as late-onset acne or persistent acne after 25 years of age. Adult female acne have clinical features that include a typical localization of the lesions in the lower third of face and neck and chronic evolution, requiring maintenance treatment. Etiology still remains unclear, it is believed genetic and hormonal factors contribute. The aim of this study was to estimate the prevalence of adult female acne in Colombia and determine its trend in the last 5 years.

**Methods:** A cross-sectional study was conducted using nationwide data from the General System of Social Security and Health in Colombia through the SISPRO database to estimate the prevalence of the adult female acne in outpatients in Colombia from 2015 to 2019 using ICD-10 diagnostic codes.

**Results:** Overall acne prevalence for the 5-year study period was 2.14 per 1000 population. The highest annual prevalence, 2.94 per 1000 population was in 2019 and the lowest, 1.71, was in 2015. The peak prevalence was observed between 25 and 29 years, and decreased below 1 per 1000 population under 50 years old.

**Conclusions:** This nationwide study of female adult acne in Colombia suggests an increasing trend in the prevalence of the last five years. We recommend further studies to define the risk factors involved in this condition.

## **INTRODUCTION**

Acne is a common inflammatory skin disease, adolescents are the population most affected with this condition, however, in the past decades, findings from research and clinical practice have evidenced that it is a frequent condition in the adult population<sup>1</sup>. Adult acne is defined as late-onset acne or persistent acne after 25 years of age<sup>2,3</sup>. Epidemiological data have shown that women have a higher prevalence than men. Some authors have called this condition adult female acne<sup>4</sup>. Clinical features include a typical localization of the lesions in the lower third of face and neck and chronic evolution<sup>4</sup>. Even though a scoring tool has been proposed for scoring acne in adult females called AFAST (Adult Female Acne Scoring Tool) to assess the severity of disease<sup>5</sup>. Etiology still remains unclear and controversial, it is believed genetic, hormonal factors, and diet contribute<sup>6</sup>. Some risk factors associated have been elucidated, like a history of acne in parents or siblings, history of acne during adolescence, no previous pregnancies, hirsutism, and stress<sup>7,8</sup>.

Regarding epidemiological data, reports of adult female acne prevalence range from 5.5% to 61.5% around the world <sup>9, 10</sup>.

Although acne is often less intense in adulthood, the negative impact on quality of life is greater than in adolescence. This condition tends to persist in adult life compared to the self-limiting course of the disease in the young population, requiring maintenance treatment <sup>3, 11</sup>.

The aim of this study was to assess the prevalence of adult female acne in Colombia and determine its trend in the last 5 years.

## **MATERIALS AND METHODS**

A cross-sectional study was conducted using nationwide data from the General System of Social Security and Health in Colombia through the SISPRO database.

This database holds all healthcare information for inpatient and outpatient medical services from the insured Colombian population, which is estimated at 95.76% (Ministry of Health; available at: <http://www.minsalud.gov.co/>; accessed May 30, 2020).

The database was queried for acne using the International Classification of Diseases, tenth revision (ICD-10), the codes included were: acne vulgaris (L70.0), acne conglobata (L70.1), acne varioliformis (L70.2), acne excorieé (L70.5), other acne (L70.8) and unspecified acne (L70.9). The cases were defined as women from 25 years old, who were diagnosed with acne by a dermatologist or general physician during an outpatient visit between the years 2015 and 2019. Each woman was accounted as one case, even though many patients had two or more medical events recorded. In order to estimate the prevalence, the denominator was the Colombian

female population from 25 years old for each year of interest reported by DANE, the entity responsible for the planning, survey, processing, analysis, and dissemination of official Colombian statistics. To define the female Colombian population from 25 years, data from the General Census conducted in 2005 and its demographics projections (DANE; available at: [www.dane.gov.co](http://www.dane.gov.co); accessed Feb, 2020) were used.

Annual prevalence from 2015 to 2019 was calculated. The annual prevalence for female adult acne was calculated as the number of prevalent cases per 1000 population in a given year divided by the total female population from 25 years old during the year of interest. Overall prevalence was estimated as the total number of acne cases divided by the total female population from 25 years old during the 5-year period. The 95% confidence intervals were estimated. SISPRO database through the Microsoft SQL Server from Microsoft Excel vs 16.37 was used for all analyses.

The Ministry of Health granted authorization for remote access to the data.

## **RESULTS**

In the Colombian population, 154760 female patients were diagnosed with acne during the 5-year period. The overall acne prevalence in the female population during the 5-year study period was 2.14 per 1000 population (Table 1). The highest annual prevalence, 2.94 per 1000 population was in 2019 and the lowest, 1.71, was in 2015, showing an increasing trend of acne prevalence in the last 5 years (Fig. 1). The peak prevalence by age group was consistently observed between 25 and 29 years for each year of the study period (Fig. 2), and decreased below 1 per 1000

population under 50 years old (Table 2). The highest annual prevalence by age group was 8.54 per 1000 population in 2019, in descending order followed by 7.05 in the same age group in 2018, and 6.04 per 1000 population in the 30 -34 years-old group in 2019. All prevalence by age group under 50 years old shows an increasing trend in the last five years, 2019 was the year with the highest prevalence for each age group.

## **DISCUSSION**

In the present study, we reported the nationwide population-based prevalence of adult female acne in Colombia. The overall prevalence of 2.14 cases per 1000 population were estimated. The annual prevalence from 2015 to 2019 also was reported at 1.71, 1.70, 1.95, 2.34 and 2.94 per 1000 population, respectively, showing an increasing trend of acne prevalence in the last 5 years. The peak prevalence by age group was consistently observed between 25 and 29 years old for each year of the study period; we reported prevalence from 2015 to 2019 in the younger age group at 4.77, 4.73, 5.72, 7.05 and 8.54 per 1000 population, respectively. The highest annual prevalence by age group was 8.54 per 1000 population in 2019, in descending order followed by 7.05 in the same age group in 2018, and 6.04 per 1000 population in the 30 -34 years-old group in 2019.

Reports of adult female acne prevalence range from 5.5% to 61.5% but these differences are partly explained by different methodological designs. Most of them are findings from general population surveys, others are from the specific population surveys as samples from healthcare centers.

Collier *et al* estimated the prevalence of acne in adults aged 20 years and older. Of 1013 participants from a specific population in United States, 540 female, reported prevalences by age group were 50.9% prevalence for the 20 - 29 years age group, 30 - 39 years, 35.2%, 40 - 49 years, 26.3% and 50 years and older 15.3%<sup>2</sup>.

In Portugal from the 1,055 evaluated adults, 779 were women from 20 to 60 years old, who visited primary healthcare centers, the acne prevalence was estimated at 63,2%, the peak prevalence by age group was 81.5% for 20 -29 years old<sup>10</sup>.

In France, a study from the general population was conducted, of 3305 women 25 to 40 years, the prevalence of adult female acne was estimated at 41%<sup>12</sup>. In a second population-based and multicenter (United States, England, Italy and Japan) cross-sectional study 2895 women between 10 - 70 year old were included. 55% had some form of acne. 45% of women aged 21-30, 26% aged 31-40, and 12% aged 41-50 had clinical acne<sup>13</sup>.

In other countries of Europe, Svensson and *et al* determined the prevalence of the common skin diseases in a population-based sample of adults in five countries. This cross-sectional study included 18 to 74 years old participants. Acne was the second most common condition, the prevalence was estimated at 19.2%. Prevalence in females (19.7%) was higher than males (18.7%). Prevalence of acne by country was estimated in Germany 17.7%, The Netherlands 13.6%, Sweden 9.3%, Portugal 6.5%, and Italy 5.5%<sup>9</sup>.

In summary, these findings provide an evidence of a high prevalence of adult female acne. Although acne is often less intense in adulthood, the negative impact on quality

of life is greater than in adolescence. This condition tends to persist in adult life compared to the self-limiting course of the disease in the young population. Adult acne is mainly mild to moderate in severity, and may be refractory to treatment<sup>3, 7</sup>, requiring a comprehensive approach to achieve successful outcomes.

Limitations of our study include an information bias because there may be a significant number of women who, although they suffer from this condition, do not seek treatment. This may underreport adult female acne cases and underestimate the prevalence.

In conclusion, this nationwide study of adult female acne in Colombia identified an increasing trend of prevalence in the last five years. This study provides evidence for guidelines construction in our context. We recommend further studies to define risk factors for adult female acne and burden disease.



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Table 1. Adult female acne prevalence per 1000 population with CI 95% 2015 – 2019

Figure 1. Adult female acne prevalence in the last 5 years

Figure 2. Adult female acne prevalence under 50 years old during 2015 -2019

Table 2. Adult female acne prevalence per 1000 population in Colombian population by age group during 2015 – 2019