

Acne as a public health problem

Leda Semyonov

Clinical Medicine and Public Health Unit, "La Sapienza" University, Rome

Correspondence to: Leda Semyonov, Clinical Medicine and Public Health Unit, "La Sapienza" University, viale Regina Elena 324, 00161 Rome. E-mail: ledasemyonov@hotmail.it

Abstract

Although acne is the most common skin disorder, epidemiological data on this condition are scarce. The social and economic effects of acne are mostly related to the high prevalence of this pathology, so much so that we can consider acne as a public health problem. Our proposal is to realize a computerized case sheet for each acne sufferer based on a minimum data set. This should include: patient's age, sex, clinical form of acne and grade of severity. This information should then be introduced into a database management system. Examining the data collected we hope to contribute to the efficient use of health care resources and to improve management of public health problems highlighted in prior epidemiological investigations.

Key words: acne, epidemiology, treatment costs, quality of life

Acne vulgaris is a chronic inflammatory disease of the pilosebaceous follicles, with multi-factorial pathogenesis. Typical lesions are open and closed comedones, inflammatory papules, pustules, cysts and nodules.

Acne is not only the most common skin disorder, but it's also the pathology with the highest cumulative incidence among the general population. Indeed, a person is more likely to develop acne than any other disease [1].

The Incidence rate of this disease changes according to the population analyzed (in terms of age, racial differences) and methods of evaluation.

Some authors confirm that the cumulative incidence of acne is 91% in males and 79% in females during adolescence, that drops to 3% in males and 12% in females during adulthood [2]. Different studies reported an acne incidence of 55% in males and 45% in females aged 14 to 16 years [3] whilst other authors stated a 29% incidence in boys and 16% in girls, per year, in a population aged between 16 and 20 years old [4]. White et al. reported an acne incidence of 85% in male adolescents and 80% in female adolescents, which dropped to 8% in the age group 25 to 34 and 3% in those aged 35 to 44 years [5].

Despite these studies, epidemiological data on acne are scarce and the community prevalence of acne is believed to be much higher than the prevalence recorded in these studies, probably because these data reflect only the population who chose to seek medical help [1, 6].

Moreover, though data is poor, epidemiological

studies, suggest to consider some other important features.

The first publication about the epidemiology of acne was in 1931 by Bloch. Since this publication, no significant evolution has been noted concerning the age of onset of acne [7].

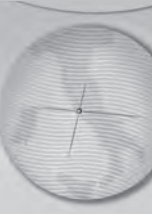
Acne vulgaris is a common disease with a prevalence of up to 80 % during adolescence [8], up to 14% of whom consult their general practitioner (GP) and 0.3% a dermatologist [9].

The prevalence of acne varies by gender and age groups, appearing earlier in females (11 years old) than in males (12-13 years old), possibly reflecting the earlier onset of puberty [10].

Peak incidence of acne is between years 17-18 of age for females and 19-21 for males. There is a greater severity of acne in males than in females in the late teens, which is compatible with androgens being a potent stimulant of sebum secretion [10].

An increasing prevalence of acne is demonstrable from 10 to 18 years of age, and gradually declines beyond the age of 20. In any case, although less frequently than in adolescence, a significant number of adults aged 20 or older also have acne [11].

Though acne seems to be more prevalent among men than women at age 18, beyond the age of 23 clinical acne is more prevalent among women. Adults over 25 show a prevalence of severe clinical acne in 12% for females and 3% for males. Between 40-49 years of age, 3% of men and 5% of women still have acne, and at 50-59 years



6% of men and 8% of women are affected [12].

The number of adults with acne appears to be increasing, although the reasons for this increase are uncertain [6].

Frequently, patients have a positive familiarity for acne (40%) that suggests a genetic basis, but the mode of inheritance is still unclear [1].

There are no racial differences in term of incidence, but the difference lies in the clinical severity, in the evolution of lesions and in the long term sequelae, with marked differences between caucasian and black people, the latter of whom seem to have a higher risk of developing severe inflammatory and cicatricial sequelae, even if the black population seem to suffer from mild forms of acne as do Japanese people [1].

Severe cystic acne has a greater male prevalence (2,43% Vs 0,3% of females) and those males more affected are in the 25 to 34 age group. However, the prevalence of severe acne has decreased over the past 20 years. This has probably been due to the improvement of treatments for acne and theme availability [13].

Concerning risk factors, such as genetic factors, emotional stress, diet and personal hygiene, those associated with the most severe forms of acne have yet to be confirmed. Only smoking has been taken into consideration in several epidemiological studies, but the outcomes concerning the role of smoking appear discordant [14, 15]. As a matter of fact, acne is a multi-factorial disease, and it is thought to result from the interplay of many factors, of both genetic and environmental origin. To this day, the precise mechanisms are still not yet fully elucidated.

As well as many other skin diseases, acne is sometimes thought of as a trivial disease in comparison with other chronic conditions of other organ systems [16]. Even if acne is not associated with severe morbidity, mortality or physical disability, it can nevertheless have considerable psychological and social consequences [6]. The social, psychological, and emotional impairment that can result from the more severe clinical forms of acne, has been reported to be similar to that associated with epilepsy, asthma, and diabetes [17]. Actually, patients could be more prone to depression, anxiety, social withdrawal, and anger, without considering that scarring can lead to lifelong problems with self-esteem [17].

As already discussed, it is clear that acne has a great impact on quality of life, especially if we consider acne as a very common skin condition [11]. Although acne is extremely prevalent, few studies have focused on what the patient with acne vulgaris experiences. Despite recent

advances in the measurement of abstract health outcomes, such as patients' perceptions, few studies have discussed the effects of acne on patients' quality of life [18].

Nowadays effective and safe treatments for acne are available, yet many do not consider it a problem worth treating [19].

Nonetheless, there are millions of visits to office-based physicians per year for patients in the age range of 15 to 19 years, and the mean age at presentation for treatment is 24 years, with 10% of visits taking place when patients are between the ages of 35 and 44 years. The direct cost of acne in the United States is estimated to exceed \$1 billion per year, with \$100 million spent on over-the-counter acne products [17].

The degree of satisfaction with treatment depends on the total cost of treatment, number of places visited, site affected by acne, and emotional stress.

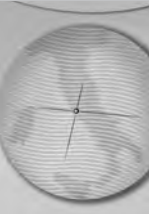
Studies suggest that those patients who had experienced side effects are usually treated for longer and pay more for treatment. Dissatisfied patients usually considered that the total cost of acne treatment is high, and had received treatment from several treatment centres than satisfied patients. In addition, high costs can contribute to treatment dissatisfaction and produce a vicious cycle [11].

Better health education and care given by medical staff should allow patients to have accurate information about the causes of acne and to have realistic expectations about the time frame and probable results of treatment [19].

The social and economic effects of acne are mostly related to the high prevalence of this pathology. The efficient use of health care resources depends on the evaluation and standardization across country, races, and migrant population [1].

Considering the above issues, one can easily confirm that acne could be considered as a public health problem in every respect. However, epidemiological data are not easily available in Italy, especially due to the lack of data from outpatient care making the burden of this disease difficult to assess. A possible solution to this shortcoming is to plan and implement a computerized case sheet for each patient suffering from acne, based on a *minimum data set*. A physician (dermatologist himself or general practitioner) should compile this case sheet, and include the following simple, but important, information:

- patient's age
- sex
- clinical form of acne (comedones, papules-



- pustules, nodules-cysts)
- grade of severity (mild, moderate, severe)
 - quality of life (high, medium or low)

In this way, it could be possible to have a simple and immediate summary of the situation.

Moreover, collecting these kind of data is quick and easy and not bothersome for the patient.

All these information should be introduced into a database management system, via web platform, in order to create a sort of network and provide these data to everyone whoever may need it, be it dermatologists, general practitioners, or treatment centres, etc. This could also be an efficient device to supervise the epidemiological trend of acne across different populations, different age groups of patients and its evolution throughout several

years. The same device could be applied to other pathologies, of course.

In addition, data collection could be promoted and monitored through a data back-up and a weekly/monthly data check.

Collecting epidemiological data is of primary importance in evaluating diagnostic tests, as well as a tool for predicting prognosis, and for evaluating the effectiveness and safety of different therapies in order to optimize of health care resources. In this way, epidemiology can contribute to public health studies. In fact, the efficient and effective management of public health problems requires an epidemiological investigation for preventive or health care interventions.

References

- 1) Williams HC, David P. *The Challenge of Dermato-Epidemiology*. Boca Raton, FL: CRC Press, 1997.
- 2) Tan JK, Vasey K, Fung KY. Beliefs and perceptions of patients with acne. *J Am Acad Dermatol* 2001; 44: 439-45.
- 3) Smithard A, Glazebrook C, Williams HC. Acne prevalence, knowledge about acne and psychological morbidity in mid-adolescence: a community-based study. *Br J Dermatol* 2001;145(2):274-9.
- 4) Aktan S, Ozmen E, Sanli B. Anxiety, depression, and nature of acne vulgaris in adolescents. *Int J Dermatol* 2000; 39: 354-7.
- 5) White MG. Recent findings in the epidemiologic evidence, classification, and subtypes of acne vulgaris. *J Am Acad Dermatol* 1998;39(2 Pt 3): S34-7.
- 6) Purdy S, Langston J, Tait L. Presentation and management of acne in primary care: a retrospective cohort study. *Br J Gen Pract* 2003; 53(492): 525-9.
- 7) Dreno B, Poli F. Epidemiology of Acne. *Dermatology* 2003;206:7-10.
- 8) Rzany B, Kahl C. Epidemiology of acne vulgaris. *J Dtsch Dermatol Ges* 2006;4(1):8-9.
- 9) Purdy S, De Berker D. Acne. *BMJ* 2006; 333(7575): 949-53.
- 10) Stathakis V, Kilkenny M, Marks R. Descriptive epidemiology of acne vulgaris in the community. *Australas J Dermatol* 1997;38(3):115-23.
- 11) Suh DH, Shin JW, Min SU, Lee DH, Yoon MY, Kim NI, et al. Treatment-seeking behaviors and related epidemiological features in Korean acne patients. *J Korean Med Sci* 2008;23(6):969-74.
- 12) Cunliffe WJ, Gould DJ. Prevalence of facial acne vulgaris in late adolescence and in adults. *Br Med J* 1979;1(6171):1109-10.
- 13) Rademaker M, Garioch JJ, Simpson NB. Acne in schoolchildren: no longer a concern for dermatologists. *BMJ* 1989;298(6682):1217-9.
- 14) Sahlander K, Larsson K, Palmberg L. Altered innate immune response in farmers and smokers. *Innate Immun* 2010;16(1):27-38.
- 15) Schäfer T, Nienhaus A, Vieluf D, Berger J, Ring J. Epidemiology of acne in the general population: the risk of smoking. *Br J Dermatol* 2001;145(1):100-4.
- 16) Mallon E, Newton JN, Klassen A, Stewart-Brown SL, Ryan TJ, Finlay AY. The quality of life in acne: a comparison with general medical conditions using generic questionnaires. *Br J Dermatol* 1999;140(4):672-6.
- 17) James WD. Clinical practice. Acne. *N Engl J Med* 2005;352(14):1463-72.
- 18) Lasek RJ, Chren MM. Acne Vulgaris and the Quality of Life of Adult Dermatology Patients. *Arch Dermatol* 1998;134(4):454-8.
- 19) Ayer J, Burrows N. Acne: more than skin deep. *Postgrad Med J* 2006;82(970):500-6.