

ACNE MYTHS



by Aurora Guerra Tapia



Translated by Dean Evans

Introduction

“What good does it do to amass a great number of facts if you do not know how to communicate them? To communicate the truth, it is necessary to talk to it, to make it friendly; it is necessary to strip it from the dark scientific machine, simplify it, adapt it for general comprehension and inject it with that strength, that grace which, focusing on the imagination, victoriously captivates the attention of all those who hear it.”

JOVELLANOS

Science likes absolute truths. In order to please it, we, its servants, search for strong evidence, strict terms, and definitive conclusions. But I would not dare dismiss the idea that there was not a certain amount of arrogance in that so orthodox of attitudes.

Should we perhaps be more understanding towards errors? Let us remember that science learns from its mistakes. It was not in vain that Edison, when asked about how many failures he had to endure before achieving his magnificent invention, said “Failures? I have not failed. I’ve just found 1000 ways to not make a light bulb!”

And so, in this book we wanted to - affectionately - shine the light on the errors. We intend to recount the confusing ideas which circulate among acne patients, and to argue our case in a reasonable and comprehensible manner, in a rather

informative, yet not everyday tone, with a view to providing tools to the people who relay information (doctors, parents, teachers ...) and all those who, in one way or another, come into contact with this illness.

False beliefs are often so firmly rooted in tradition that doctors find it difficult to argue against them. The style of this book aims to provide the facts necessary to do this, taking support from recent literature from around the world related to the topic.

We hope it serves its purpose to ensure that the axiom of the British writer Phyllis Bottome remains valid ("There is nothing final about a mistake, except its being taken as final").

Aurora Guerra Tapia

Acne is produced by eating chocolate and other fatty foods such as crisps and chips

The influence diet has on acne

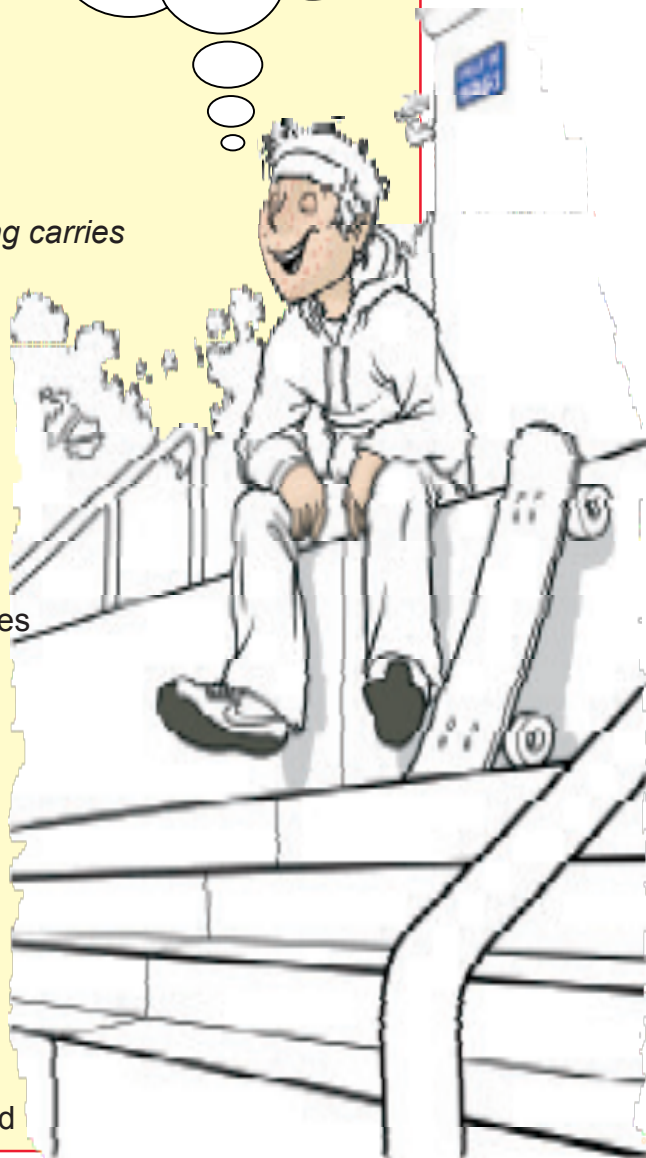
The myth explained

“Doctor, I really can’t cope with this kid. I’m fed up of telling him not to eat chocolate or crisps ...

But it’s no use! The stubborn thing carries on eating what he shouldn’t. And so there’s no way his spots will clear up. Isn’t that right doctor, that he has to go on a diet?

We dermatologists have heard these words and other similar ones an infinite number of times. Even some doctors still maintain this old belief and appear reluctant to change their view. And in the last few years, the controversy has been reignited in some media.

Why must this belief, on one hand



so prevalent in society, often force some teenagers who are already worrying about their physical appearance to suffer further by placing limits on their food choices?

Why do some patients insist that, when they break the rules that their families or they themselves have imposed, we confirm that they get worse?

Why do some patients claim that they have a new spot the day after they eat chocolate or crisps?

Why, in scientific literature, is this topic occasionally still treated as though it is unresolved?

Not everything is black and white: acne also has a grey area

Extensive, rigorous scientific studies have not found evidence that any food item produces or aggravates acne. However, other scientific studies have occasionally found a relationship between a diet high in carbohydrates and an increase in these lesions. So, is there a controversy surrounding the topic? The controversy does exist, but in scientific terms, which lead to a definitive position in which diet *is* or *is not* important, according to the cases: the black and the white.

“The white”

The intake of fats can cause weight increase in a patient with acne. But this does not mean that sebum production, one of the contributing factors to acne, is also increased, nor that its production decreases in the absence of fats.

Sebum (that is, the secretion product from the sebaceous gland) is composed of squalene, fat esters and triglycerides. It is produced under the influence of androgens - the masculinising hormones produced in the gonads (testicles and ovaries) or the adrenal gland - which control the size of the gland and its activity. This action takes place from puberty onwards, when testosterone is converted to 5-alpha-

dihydrotestosterone thanks to the effect of 5-alpha-reductase present in the sebaceous gland.

Throughout this process, fatty foods do not play a part. Therefore, the type of food ingested does not determine a higher production of androgens, nor of sebum, nor of acne. Furthermore, experiments carried out in similar population groups but with two different diets (high in fat or low in fat) have not shown a significant difference in the development of this skin condition.

Other studies using set foods have also failed to show a sufficient relationship. One foodstuff which was recently suggested is milk, along with its derivatives. In this case, for example, a recent study of 4,273 teenagers with similar lifestyles but with different habits with regard to inclusion of milk in their diet showed that there was a positive relationship between the consumption of skimmed milk and acne. The researchers speculate that the association may be caused by hormones (such as bovine IGF-I, insulin-like growth factor type I) present in cow's milk, but this has not been definitively proven. Moreover, seafood can contain relatively high levels of iodine, an element which can cause acne to flare up (when in the form of iodides) or which can aggravate an existing condition, though this effect is probably not enough to provoke a flare-up of acne simply from eating seafood.

“The black”

It is well known in the scientific community that one of the factors which determines the existence and persistence of acne is the suffering of metabolic syndrome, whether it be the full syndrome or parts of it. This syndrome centres around the resistance to insulin and all the consequences that arise from this:

- Compensatory hyperinsulinaemia.
- Anomalous tolerance to glucose.
- Type 2 diabetes mellitus.
- Atherogenic dyslipidaemia.
- Central or visceral obesity.
- Arterial hypertension.

- Hyperuricaemia.
- Haemorheologic changes and changes to fibrinolysis.
- Endothelial dysfunction.
- Elevation in markers of inflammation.
- Polycystic ovaries.
- Hyperandrogenism (seborrhea, acne, hirsutism, alopecia).

Hyperinsulinism increases the circulatory androgens by reducing the plasma concentrations of sex hormone-binding globulin (SHBG). The reduction of SHBG causes an increase in secretion from the sebaceous gland by increasing free testosterone which is later transformed into 5-alpha-dihydrotestosterone, with a significant effect on the function of the sebaceous gland, as we mentioned earlier.

One of the factors which aggravates hyperinsulinism is the increased intake of products with a high glycaemic index, that is, foods rich in refined sugars which cause a rapid increase in blood sugar levels.

Therefore, treatment of this syndrome is based on weight loss via a low calorie diet comprising foods with a low glycaemic index. This “diet” may help improve acne lesions in patients with incipient metabolic syndrome.

Furthermore, androgens are metabolised locally in fatty tissue, so when there is an abundance of this tissue (as occurs in obesity), more androgens may be produced which contribute to the existence and persistence of acne.

“The grey”

There is not one single food that makes acne appear and persist, but in overweight patients or those with metabolic syndrome, a reduction in weight with a low calorie diet can improve the clinical picture of the skin.

What should be done?

The most advisable thing is to follow a healthy, varied and balanced diet, with lots of fruit and vegetables, without restrictions, but without eating high amounts of fatty, processed or refined foods or those with a high glycaemic index.

In obesity cases, weight loss via a low calorie balanced diet is recommended.

If any patient reports an aggravation of the condition with a particular item of food, they should not consume it, since, although there may not be a scientific reason behind it, we cannot forget that we are not dealing with illnesses but ill people.

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Acne only occurs in adolescence

Persistent acne or acne in mature women

The myth explained

"Doctor, the other day I went out with my friends and they nearly made me cry. They didn't have to tell me that they thought older women didn't get acne anymore..."

... "But the thing is, they're right! I don't understand either why I still have these spots at 34. And, when I'm about to come on my period, they get even worse. I get really big, deep and painful ones. Especially on my chin and around my mouth. There are only a few, but they're around for so long that just when the ones from one period are going, new ones are already coming out. And the treatments are not working for me ..."

When a female patient (because generally they are women) says things like this, in a certain way she feels alone, unlucky and the unfortunate unusual one. However, although

Even if you don't believe it, we do have more than one thing in common



acne vulgaris has been called “teen acne” for many decades since the majority of the sufferers are teenagers, there are more and more 25, 30 or 40 year old patients, some even older, who still have this type of skin lesions.

So has the prevalence of acne increased among adults?

Perhaps the presentation and development of the disease has changed?

Or maybe it is the biology of the individuals that has changed?

There is a reasonable percentage of “young adult” patients with acne

Society as a being with its own way of life has changed, and so have the terms used when referring to age. Becoming economically independent or having children, for example, now take place later in life and the section of the population reaching a stable lifestyle in society is getting older and older. Hence the terms “young adults” or “mature young people”, which are used nowadays to refer to individuals between 25 and 40 years old, to account for the fact that they still behave like young people, despite being adults on paper.

It would appear that acne has also assumed this “delay”, since now it is more prevalent in older patients than a few decades ago. But post-adolescent acne has always existed, and although any possible concurrent changes should be studied, we should not be surprised by its presence in patients of this age.

Currently, the prevalence rate of acne in adults is around 3% in males and 11-12% in females, and it decreases significantly in patients over 45.

What is it like?

It usually presents with mild to moderate acne, usually the inflammatory type, with

few spots which affect the face, the perioral region, the chin and the ramus of the mandible in particular.

Clinically, two main groups can be distinguished:

1. *Persistent acne* (82%). The patients have been diagnosed with acne since adolescence. They have lesions most days and may experience worsening of the condition during menstruation. The lesions tend to be papulonodular, particularly on the lower part of the face and on the neck.
2. *Late on-set acne*. It presents after puberty and can be divided into:
 - a. *Acne of the chin*. Inflammatory, with lesions around the mouth and on the chin, on which spots are not usually found. It affects women and the condition is exacerbated when the woman is premenstrual. It tends to be resistant to treatments and produces post-inflammatory erythema, with hypo- or hyperpigmentation and scarring.
 - b. *Occasional acne*. It appears later on, either with no apparent cause or in association with a systemic disease. It can affect any area.

Why?

The reasons why acne can persist in adulthood are not fully understood, but we do have some data available. For example, 50% of patients have a history of post-adolescent acne in first degree relatives. In fact, the risk factor of suffering from adult acne if a first degree relative also has the condition is 3.93.

It is also known that women with persistent acne have higher levels of sebum secretion than those without it. Approximately 85% of women affected experience a premenstrual exacerbation of the condition. And around a third present with hyperandrogenism, such as hirsutism, alopecia or menstrual changes, or show clinical or biochemical data of metabolic syndrome.

What should be done?

Although the majority of patients do not show any sign of hormonal abnormalities, supplementary tests should be carried out for the following:

- Dehydroepiandrosterone sulphate (DHEA-S), which will reveal any changes to the adrenal hormones.
- Testosterone, which regulates ovarian activity.
- Luteinizing hormone-follicle stimulating hormone (LF/FSH), which can confirm polycystic ovaries.
- Prolactin, in order to diagnose a possible pituitary disorder.

The analyses should be undertaken between day 1 and 5 of the menstrual cycle. In addition, a haemogram, liver function tests, blood glucose level tests, a lipid profile and an antithrombin III test should be carried out, since many of these patients will need systemic treatment and the use of contraceptives. For some, determining antithrombin III levels would be insufficient to confirm a diagnosis of a blood clotting disorder, but today, it is still the recommended test.

Since the therapeutic response tends to be slow, patients must be motivated to complete their course of medication. A combination of oral and topical treatments would be ideal. In general, the treatment of acne in adult women differs from that of adolescents, in whom the lesions are more resistant to conventional therapy. In many cases, consideration must be given to the use of oral isotretinoin in low or intermittent doses, the prescription of antiandrogens such as cyproterone acetate, and specific, cosmetic topical treatments, all of which work together to produce the final result.

It is important to dedicate time and energy to these patients, since the impact of acne on their quality of life can be even bigger than in adolescents.

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The more you wash your face the fewer spots you have, since you get rid of the infection

The role of hygiene in acne

The myth explained

“My mum says that I’m dirty, that I don’t wash my face properly and so I won’t get better ...”

... She says that because I don’t wash my face properly and I’ll get more and more spots. I leave my fringe long so the ones on my forehead are covered at least ... And she tells me I’m making it dirtier, that I’m spreading it and that I’ll never get better ... ever!

But for two weeks I’ve been washing three times a day with a special soap, and I still have whiteheads.

Now I don’t know what to do: whether to wash everything even more or give up. I’m sad and depressed ...



I look at the patient with understanding. I have to explain to her what acne is, why it occurs, if you have to pay special attention to hygiene, if I think she is dirty, if all of

this is happening because she does not look after herself properly ...

As well as having acne, she feels guilty.

But it is not her fault.

I am ready to explain...

Is acne an infection?

The exact role which the microflora of the skin plays in the development of the pathology of acne, chiefly in the formation of spots and inflammation, is still subject to controversy.

Healthy skin is very resistant to infections, since it is home to groups of bacteria called saprophytic, normal and resident flora, which reside there without causing infection. These organisms are relatively stable in terms of number and proportions. A second group of organisms can also be found on the skin temporarily (transient flora), and a third group which can colonise the skin occasionally in a minority of individuals and which are given the name associated flora.

The saprophytic flora is responsible for the synthesis of free fatty acids in skin surface fats, which have a bacteriostatic and fungistatic action. The normal flora on the surface include gram positive cocci such as *Staphylococcus* sp. and *Micrococcus* sp., and gram negative bacilli such as *Corynebacterium* sp.; only one gram negative bacillus, *Acinetobacter* sp., is found here. In the follicles, in addition to this surface flora, anaerobic bacteria such as *Propionibacterium* sp. are found in deep areas, and then yeasts such as *Pityrosporum* sp. are found closer to the surface.

The infection can be a primary process when it appears on healthy skin, secondary if it arises on damaged skin (from burns, eczema, trauma, etc.), or tertiary when it involves the skin affection of a systemic infection (as happens with bacterial

endocarditis, in streptococcal or staphylococcal toxin-mediated syndromes, etc.).

Although on the skin's surface and in both normal and affected pilosebaceous follicles, three resident organisms have been isolated (*Propionibacterium acnes* and the dominant coagulase-negative staphylococci *Staphylococcus epidermis* and *Pityrosporum* sp.), the microorganism dominant in the sebaceous regions of the skin is *P. acnes*. This bacterium grows in the sebaceous follicle and is transported to the skin surface on the flow of sebum, some of the triglycerides of which it metabolises. Its close relationship with the sebaceous gland implies that it is not present in childhood, rapidly increasing in puberty.

Nevertheless, the fact that it is present does not mean that it causes infection, since, on the one hand, the quantification of the bacteria on the skin's surface has not only not shown a relationship with the severity of the acne, but the skin of acne patients has not been found to show a larger population of *P. acnes* when compared with the skin of healthy adults. On the other hand, the microbiological profile of the culture of the content of the spots has shown little difference, both qualitatively and quantitatively, with that of normal follicles. Finally, the fact that some prepubescent children have spots and *P. acnes* has not been isolated on their skin shows that this bacterium is not necessary for the formation of spots.

Therefore, acne is not an infection.

Is the microorganism “Propionibacterium acnes” important in the formation of acne?

Patients with acne have a high content of lipids derived from the oxidation of squalene both on their skin surface and within the spots. The oxidation reactions, with the subsequent reduction of oxygen, can stimulate the growth of anaerobic flora and, more specifically, *P. acnes*. The porphyrins produced by this microorganism in turn catalyse the oxidation of squalene, repeating the process. This fact suggests a possible relationship between spot formation and the secondary bacterial

colonisation of the follicle, supporting the theory that microorganisms colonise the follicle when the initial comedogenic lesion already exists. The time of the colonisation could be critical in terms of the establishment of the inflammatory lesion, its severity and its duration, but it would not explain its formation.

It is also possible that *P. acnes* contains a superantigen which triggers the inflammation in individuals with the genetic predisposition. This bacterium produces leukocyte chemotactic factors which attract lymphocytes and polymorphonuclear leukocytes, which in turn trigger the early inflammatory changes in the follicle. The neutrophils can be found intact in the spots, which suggests that the soluble inflammatory factors may be disseminated from them without the need for said lesions to break. The release of hydrolytic enzymes by the neutrophils may also damage the follicular wall, causing a disruption to the epithelium, with the subsequent secretion of lipids, bacteria and corneous cells to the dermis, and thus producing a foreign body reaction. Moreover, *P. acnes* itself creates proteases and other degradative enzymes which can play a role in the rupture of the spots.

Therefore, acne does have a microbiological causal factor which does not fulfil the criteria of a conventional infection, but it does have a decisive influence in its aetiopathogenesis.

Does bad hygiene have an effect on acne?

Given that it has never been proven that acne is produced because of bad hygiene, it is not essential to follow a special hygiene routine. There are some very dirty people (the disadvantaged, for example), and it is not for this reason that they have acne.

If hygiene is excessive, vigorous washing with aggressive soaps can even cause changes in the skin's barrier, encouraging the entry of other microorganisms and increasing the irritation and possible sensitivity to specific topical treatments.

What should be done?

It is essential to follow a normal hygiene routine, suitable for each skin type, with mild, non-irritant soaps.

The acne patient should not be accused of being careless or dirty: acne does not get better the more you wash.

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Smoking does not affect acne and, in fact, it can help improve its progression

Smokers present with more intense and persistent acne

The myth explained

“Doctor, I’d like to improve my health in general and stop smoking. But since I’ve got acne ...”

... Even though I’m already 35, and I’ve heard that smoking is good for spots, I’m not sure what to do ... What do you suggest?

It is obvious that any doctor knows that smoking seriously damages your health, and that they regularly forcefully recommend beating this addiction. But some obstinate defenders claim that tobacco possesses certain powers, such as its ability to improve acne.

Why does this smell of smoke?



They are mistaken.

The relationship between tobacco and acne

Tobacco is a plant product obtained from the **leaves** of several **plants** of the genus **Nicotiana**. Its particular nicotine content makes it addictive. It is sold legally throughout the world, though it is subject to numerous restrictions in order to be smoked in some countries, since it has negative effects on public health.

It is composed of the alcaloide nicotine, present in variable proportions in the leaves (from less than 1% up to 12%). The rest is composed of what is known as *tar*, a dark, resinous substance consisting of several chemical agents (hydrogen cyanide, carbon monoxide, carbon dioxide, nitrogen oxide, ammonia, etc.), many of which are generated as result of combustion.

Currently, 38.8% of the Spanish population over 15 smokes. According to data from 2001, 27.2% of women say they smoke, compared with 22.9% in 1987. Therefore, proportionally, women have increased their smoking activity.

Often, acne persists in adulthood, though the reason behind this is not completely understood. Nevertheless, it seems clear that smoking acts as a promoting factor for the persistence of the disease. It has been observed that women between 25 and 50 years old who smoke are more likely to suffer from acne (41.5% compared with 9.7%) and moreover, clinically, it involves non-inflammatory forms of acne (with micro- and macrocomedones). In another study which included men and women between the ages of 1 and 87, acne was found to be much more prevalent among smokers (40.8%) than non-smokers (25.2%). It seems, therefore, that tobacco is an aggravating factor of pre-existing acne or an inciting factor for acne in people with a predisposition to the disease.

What should I do?

Smoking is a promoting factor of acne and should be avoided by patients who suffer

from this condition, both if they are active or passive smokers.

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Acne is simply an unimportant aesthetic problem

The psychological impact of acne

The myth explained

"I feel different, I don't want to study or leave the house ..."

... Sometimes I just want to go to sleep and wake up when I don't have spots anymore.

"I've already told my daughter to calm down. Spots always go in the end and there's no need to worry. Nobody dies from acne. Aren't I right, doctor?"

Like he's going to call me when I look like this ...



Well, no, you are not right. Because while it is true that nobody dies from acne, a patient can feel so bad that they wish they would die.

Health is a much broader concept than the absence of illness, since it includes all the physical, psychological and social factors which can influence the life of an individual. Some skin diseases which do not have a large effect on physical function, as would be the case with acne, can have a much bigger impact than others and change the emotional stability of the individual, affecting their activity and crucial development. The impact of this condition can probably put the patient under so much stress that this alone can produce the release of hormones which in turn can exacerbate, hasten or prolong the original skin condition, creating a vicious cycle of immeasurable psychological consequences.

Acne and quality of life

Health is an essential, perhaps the most important component of happiness. And at the same time, physical appearance is an essential part of physical and mental health.

When they have acne, teenagers suffer in the broadest sense of the word. And, furthermore, this suffering can lead to personality disorders, depression or changes in the capacity to form relationships. In this way, aesthetic changes to the skin which arise in puberty can cause introspective and solitary personalities or, conversely, aggressive and antisocial ones.

In the study *“Estudio epidemiológico descriptivo transversal sobre la prevalencia del acné en la población adolescente española”* (“A cross-sectional descriptive epidemiological study of the prevalence of acne in the adolescent population of Spain”), an investigation carried out in Spain with the aim of understanding the psychological impact of acne, the following data was found:

- 73.03% of the teenagers interviewed were worried about suffering from acne.
- 38.27% of the teenagers with severe or moderate acne have stopped leaving the house because of this.

- In 20.7% of cases, acne has affected their studies.
- In 48.7%, acne has interfered with relationships with people of the opposite sex.
- 30% have had problems with their friends.

But acne is neither unique to adolescence, nor experienced any differently in adulthood. Among young adults, acne has a significant psychological impact. Aesthetic changes to the skin which appear in middle age tend to cause anxiety, insecurity, depression and insomnia, with their consequent negative effects on social, family and sexual aspects, in addition to which disadvantages at work must also be taken into account. It has been proven that, in the same conditions, patients who suffer from acne find it more difficult to find a job than those who do not. Even when the condition has healed, the irreversible scarring leaves permanent marks which affect the patient physically and psychologically.

Nevertheless, there are fewer young adults - those older than teenagers - who show distress as a result of their acne (22.8% of teenagers who suffer from acne say they are very anxious because of it). However, although the percentage is lower, this is not the case with the impact on quality of life.

If a patient is in a permanent state of anxiety (that is, feeling overwhelmed or constantly thinking about one thing or eventuality), this is equivalent to a serious disorder for their quality of life which can interfere with the patient's normal activities. Their social and affective relationships are affected to a larger extent than other activities, since the biggest impact is seen with interactions with the opposite sex and with friends. This concern is greater in women, especially young women, who feel more vulnerable than males when faced with aesthetic changes. Here are some figures related to this:

- 26.3% of young people with severe acne have stopped going to school for this reason.
- 17.65% of young people with severe acne have stopped meeting up with their friendship groups at some time due to acne.
- 46.75% of young people with acne have cancelled or postponed a date with a person of the opposite sex at some point because of acne.

- 22.01% of young people with acne have avoided doing sport at some time due to acne.

These negative feelings appear when an adult suffers from acne. The most recognised feelings are embarrassment (22.4%), anger (19.1%), worry (17%), annoyance (16%) and desperation (15.4%). (These figures are all found in the study “*Estudio epidemiológico descriptivo transversal y aleatorio sobre la prevalencia del acné en los jóvenes españoles de 18 a 24 años de edad*”).

In the recent study by Tan et al. (2007), which was undertaken in Hong Kong with 522 people aged 15 to 25, it was found that 52.2% of the participants suffered from acne and 26.2% showed emotional changes - not least loss of self-esteem - because of acne, although just 2.4% saw a doctor. In the questionnaire they completed regarding the psychosocial impact of their acne, 22.4% answered that they thought about their acne often or all the time, 32% said that they were often or constantly, worried about the presence of acne on their face and 19.2% felt feelings of frustration.

Patients with acne stated that because of their condition they suffered emotional and functional effects similar to those described by patients with psoriasis, and acne can cause worse psychosocial effects than eczema or psoriasis. Furthermore, when compared with other illnesses, patients with acne described higher levels of emotional, psychological and social problems than those patients with severe chronic illnesses such as asthma, epilepsy, diabetes, lumbago or arthritis. In the same way, in a study comparing acne with other dermatological illnesses, Gupta & Gupta (1998) found that patients with mild to moderate acne presented with higher levels of suicidal thoughts (5.6%) than patients with alopecia *areata* (0%), atopic dermatitis (2.1%) or psoriasis which affected less than 30% of the body surface (2.5%).

What should be done?

Acne is not a trivial disease, both when considered in isolation or in comparison with other chronic illnesses.

The significant psychological impact of acne on quality of life makes it necessary to consider this condition as a serious illness which requires suitable early treatment by a specialist.

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