Acne vulgaris and Associated Impact on Quality of Life

PEER REVIEWED

Acne vulgaris or 'pimples' is a very common inflammatory skin disease affecting young adults all over the world, irrespective of race, ethnicity and geographical location. Prevalence of acne during adolescence is common enough to label it as a physiological process associated with other changes occurring during puberty, however, the underlying inflammatory processes involved classify it as a disease. Another important aspect associated with acne which affects the person psychologically and socially is the disfigurement involving the face. Psychological burden and social and emotional impairment associated with facial acne can be as devastating as that of a variety of chronic conditions such as arthritis, diabetes, epilepsy and asthma[1,2].

The pathophysiology of acne involves chronic inflammation of *Pilosebaceous units* which consist of hair follicles and sebaceous glands. The regions of the face, back and scalp are particularly known to be rich in sebaceous glands. The main physiological changes resulting in acne are:

- Seborrhoea (increased sebum secretion / oily skin);
- Blockage of the follicular opening by plug formation due to increased cell turnover (hyperkeratinisation);
- Alteration of the quality of sebum lipids; and
- Proliferation of *Propionibacterium acnes* (usually the normal commensals of the skin) within the plugged follicular openings of the skin.

There is a simultaneous spurt in the level of androgens or sex hormones during puberty, which plays a key role. All the events together lead to appearance of pleomorphic lesions of acne vulgaris, such as open and closed comedones; (commonly known as *black heads* and *white heads*), papules, pustules and nodules. Lesions such as cysts, pseudocysts and abscesses are considered as severe and usually lead to lifelong scarring[3-5]. Other factors which are known to attribute to the pathology are environmental factors, such as hot and humid climate, poor hygiene, occupations associated with heavy sweating, e.g. Cooks , people working with heavy oils, people wearing heavy makeup, and consumption of diet with high glycaemic index or high fat contents.

Acne represents one of the most prevalent skin pathologies, with a very high global burden of disease (GBD). During an epidemiological study conducted in 2013, acne was found to be affecting ~85% of young adults in the second and third decade of their life[6]. A similar percentage was observed during various other studies conducted across the developed countries, like the USA, France, the UK and others [7-10]. In the tropical island of Mauritius, where hot and humid climate prevails during most of the year, a hospital-based study in 2013 showed acne to be the commonest skin pathology affecting the young age group, which was followed by fungal infections and eczema[11].

The psychological consequences of living with skin diseases can be significant, as skin is considered as an organ of communication and plays a vital role in socialisation. Embarrassment caused by acne and associated complications such as scars and post-inflammatory hyperpigmentation can have a greater psychosocial burden on the sufferer[1]. The array of the symptoms may range from common psychological entities such as anxiety and depression to serious suicidal tendencies in severe cases.

Besides this, acne patients are very much prone to low self-esteem, low self-confidence, low self-assertiveness, embarrassment, social withdrawal or disapproval, affectation, shame, altered body image, psychosomatic symptoms (e.g., pain and discomfort), obsessive-compulsiveness, and suicidal ideation. These symptoms are found to be more commonly associated with moderate to severe acne[1, 12-15].

Stress has been documented to have an impact on acne manifested by young adults experiencing flaring up of acne lesions during examinations or other stressful conditions. Also, this was found to occur without any significant alteration in sebum production[16,17]. Acne excoree, a variant of acne with a female prevalence, is characterised by compulsive skin picking and has been associated with stress or personality disorder. In addition, various studies have shown that acne can affect patients' functional abilities. Patients with acne are reported to show academic underachievement and higher unemployment rates compared to patients without acne[18,19].

Quality of Life Associated with Acne

WHO defines quality of life (QoL) as the "Individual's perception of their position in the context of culture and value systems in which they live and in relation to their goals, expectations, standards, and concerns"[20]. The impact of skin diseases in general, and acne in particular, on quality of life (QoL) has been well acknowledged over the last three decades[1].

In recent years, emphasis has been placed by psychologists and physicians on the importance of assessing the effects of acne on the patient's quality of life[21-23]. It provides a valuable insight into the debilitating effects of acne on patients' life, which patients themselves rarely address. To assess this in a standardised manner, several acne-specific quality of life (QoL) questionnaires have been developed, for example Acne Disability Index (ADI), Cardiff Acne Disability Index (CADI), Assessment of the Psychological and Social Effects of Acne (APSEA), Acne Quality of Life (AQOL), Acne-Quality of Life Index (QOLI), Acne-QoL, and Acne Q4[24].

In clinical practice, the assessment of quality of life (QoL) allows a clinician to understand how a patient's life is impacted by disease from the patient's point of view and helps in selecting the most appropriate treatment for that patient. It also helps to monitor the compliance of the patients; as most of the acne treatments are associated with mild to moderate side-effects which makes it difficult for the patient to adhere to the treatment. An improvement in the scores of QoL index questionnaires can be an indication of compliant and successful treatment if they are applied before and during the course of the treatment[21,25-26].

Various factors are known to affect quality of life associated with acne apart from the severity of acne, which is probably the most influencing factor. Studies conducted all over the world have come up with some interesting findings.

Age

The peak incidence of acne occurs around the pre-pubertal to pubertal age. In late adolescents, above the age of 16 years, this population moves towards young adult roles and appearance is given more importance than at an earlier age. Researchers found in the studies done in France and the USA that severity of acne worsens as age advances and this affects the overall quality of life (QoL). It is proposed be attributed to increased exposure to social, emotional and occupational functioning at this age[27, 28].

In a study carried out in North India by Sumir Kumar *et al.* [29], 125 male and female subjects within the 11–30 year age group, suffering from mild to severe acne, were assessed for a quality of life questionnaire. The impact on quality of life was found to be more in the age group of 21-30 years as compared to the age group of 11–20 years, although in the latter age group the clinical severity of acne was mild to moderate only. However, above 30 years, the patients were seen to be less affected psychologically. This was in line with studies carried out by Ismail *et al.*[30] and Priya Cinna *et al.*[31]

However, conversely, Salek *et al.*[32] found no correlation between age and QoL in their study assessing handicap due to acne.

Gender

Acne most commonly involves the face and affects the appearance of the individual. Though in the present day, both men and women are equally conscious about their external appearance, various studies across the world have shown that usually women are more affected psychologically due to acne. In a study conducted by Sumir Kumar *et al.*[29] on males and females suffering from moderate to severe acne, females were found to have high Cardiff Acne Disability Index (CADI) scores in comparison to males, indicating higherpsychological involvement.

In another study carried out in schoolchildren to assess quality of life associated with acne, Jankovic *et al.*[33] observed a significant gender difference with the Cardiff Acne Disability Index (CADI) score being more in females. This was seen as being in line with studies carried out by Ismail *et al.*,Cotterill *et al.* and Halvorsen et al., where females had higher scores in quality of life (QoL) questionnaires and were found to be more concerned about their looks[30, 34-35].

However, a study done by Walker and Lewis-Jones[36] showed no gender differences in the Cardiff Acne Disability Index (CADI) scores obtained, and both males and females were found to be equally concerned about their acne.

Severity of Acne

A strong correlation between severity of acne and quality of life has been documented and confirmed in many studies conducted across the globe. Increases in the grades of acne are associated with poor quality of life questionnaires which reflect social withdrawal, low self-esteem and difficulties in relationships .. Similarly, post-treatment improvement in the grades of acne is found to be associated with improved scores on QoL questionnaires.

Martin *et al.*[37] observed that the quality of life (QoL) in facial acne correlated with the patient-reported severity and the QoL scores worsen with increasing severity. Sumir Kumar *et al.*[29] found that there was significant correlation between severity of acne and the Cardiff Acne Disability Index (CADI) questionnaire. Similar observations were made by Srivastava *et al.*[38], Hassan *et al.*[39] and Priya Cinna *et al.*[31] during studies conducted on adolescent and adult male and female volunteers.

Impact of Treatment

Most acne treatments are associated with side-effects such as dryness of the skin, scaling, irritation, burning / stinging sensation and initial flaring-up of acne. With effective treatment regimens and compliant patients, usually a significant improvement in acne grades and quality of life can be seen in a clinical practice. Assessing quality of life (QoL) at baseline provides important information about patients' psychological status with regard to the disease.

In a study where an anti-acne therapy was being assessed on 111 patients, a substantial improvement in the scores on quality of life (QoL) instruments was seen after initiation of the therapy[40]. In a study conducted by Priya Cinna *et al.*[31], a positive treatment history and DLQI / CADI scores were found to be strongly correlating. Quality of life (QoL) scores were better among patients who had taken treatment and this was statistically significant. This result was similar to that studied by Walker and Lewis-Jones and Martin *et al.* [36,37], who observed that among the 20 treated patients, 66% had overall improvement in the QoL scores. Exceptionally, in contrast, Tejada *et al.*[41] in a study conducted in southern Brazil found that treatment had no significant impact on the improvement in the quality of life (QoL) scores.

Discussion

Acne vulgaris is a very common skin condition affecting young adults globally. Cosmetic disfigurement with acne can lead to significant psychosocial morbidity in this vulnerable population who are at crucial stages of physical and emotional maturity and socialisation. It can significantly affect an individual's personality who may suffer from various psychological morbidities such as anxiety, depression, low self-esteem, social inhibition and obsessive compulsive disorder, up to suicidal intentions. Large numbers of studies have been conducted globally to study different aspects of acne and its impact on quality of life. A strong correlation has always been observed between severity of acne and poor quality of life. With few variations, factors such as age and gender have been seen to correlate well with QoL scores. Usually, therapeutic treatments are found to improve quality of life of the patients. However, during the early stages of the treatment, especially when irritating therapies such as topical retinoids are employed, the quality of life (QoL) score can deteriorate due to associated side-effects. With due counselling, such negative experiences can be eliminated.

Assessment of quality of life (QoL) before commencing any treatment provides the clinician with a good insight about patient's perception and psychological impact of the disease so as to treat them in an integrated manner. These psychological inputs help to improve the doctor-patient relationship, resulting in better therapeutic outcomes. Various practices can be inculcated in the clinical practice along with the medical treatments, such as:

- Health education in secondary school to make adolescents know more about the pathophysiology of acne and the treatments available.
- Spreading awareness to seek the medical treatments and the treatments available.
- Emphasising the importance of starting treatments at an early stage to halt the progression of the disease and prevent complications such as scars.

- Incorporate a quality of life (QoL) questionnaire in a routine clinical practice to identify the psychologically at-risk patients.
- Establishing acne clinics with the provision of counsellors / psychologists.
- Group discussion forums / acne support groups.

This will enable the susceptible subjects to overcome their psychosocial inhibitions and improve self-confidence, leading to an uncompromised quality of life.

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