

## Quality of life in black African patients with keloid scars

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### Abstract

A keloid scar is a benign skin tumor and we aimed to assess the Quality of Life (QoL) of black Africans with keloid scars based on the Dermatology Life Quality Index (DLQI). We conducted a cross-sectional descriptive study in the department of dermatology of the teaching hospital of Treichville in Ivory Coast. We recruited 132 patients with keloid and 3612 dermatoses without keloid: The prevalence was 3.50% (132/3753). We included 120 patients aged from 16 to 63 years old, the sex ratio was 0.46 (38/82) and the mean age was 34.20 years. Keloid scars were mostly secondary to skin trauma in 30.00 % and infection in 21.67%. The commonest site was the ear in 29.17 %. We reported Keloid with pain in 53.33% and pruritus in 95.00%. We observed psychological impact in 65.83%. The DLQI scores were moderate and high in 61.66 %. QoL was impacted significantly when keloid was associated with pain ( $p=0.046$ ), pruritus ( $p=0.81$ ) and functional disorders ( $p=0.29$ ). The DLQI score could be a valuable tool to assess QoL in black African patients with keloid, for better treatment option.

### Introduction

A keloid scar is a hyper-proliferation of fibroblasts characterized by over production and abnormal deposition of collagen. It can occur spontaneously or secondary to skin trauma or infections.<sup>1</sup> A keloid scar is more likely in an individual with dark, pigmented skin. This excessive scar formation can extend beyond the original boundaries of the initial wound.<sup>2</sup> Usually, it is a hyper-pigmented, erythematous, painful and often pruritic, with irregular borders and poor cosmetic effect.<sup>1,3,4</sup> The exact pathology remains incompletely understood and complex, and involves genetic and environmental factors.<sup>1</sup> A keloid scar can lead to esthetic,

physical, and psychological impacts in affected patients.

Treatment of a keloid scar is complex, difficult and frequently associated with recurrence.<sup>5</sup> Several treatment options are available, all of which are aimed to controlling to different degrees physical symptoms. However, treatments do not take account of the feelings, ability to fulfill daily tasks, or quality of life (QoL) of a patient with a disfiguring symptomatic keloid scar.<sup>2</sup>

We aimed to assess the impact of keloid scars on the QoL of black African patients. We did so by focusing on the perceptions and psychological impact of having these disfiguring benign tumors.

### Materials and Methods

#### Type of study and duration

This was a cross-sectional descriptive study of all cases of keloid scars diagnosed in the department of dermatology of the teaching hospital of Treichville (Abidjan, Côte d'Ivoire) from July 1<sup>st</sup> to December 31<sup>st</sup> 2017.

#### Patients

We recruited patients of both sexes and ages who consulted for keloid scars in the department of dermatology at a teaching hospital in Treichville during the study period.

#### Inclusion criteria

The inclusion criteria were patients aged of 16 years old and over who consulted for one or multiple keloid scars evolving over 1 year and who gave their oral or written informed consent to participate in the study.

#### None inclusion criteria

The none inclusion criteria were patients with an allergy or adverse reactions to certain drugs (*e.g.*, lidocaine, corticosteroids); chronic dermatoses (*e.g.*, psoriasis); aged <16 years presenting with a keloid scar; hypertrophic scars and patients with other dermatoses.

#### Collection and analyses of data

A survey comprising 37 questions related to demographics, clinical features, and impact on QoL was completed. Data were recorded on paper.

Demographic data included age, sex, ethnic group, marital status, education level, and employment type, clinical features focused on the history/length/location of keloid scars, history of previous treatment, length of time since the keloid scar devel-

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Ethical considerations: Oral and written informed and consent for publication of information relating to patients in a medical journal was obtained from patients.

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oped, pain, and pruritus were collected. The diagnosis was made on clinical presentation based on the scars having the following features: thick erythematous cutaneous growth, borders beyond the original wound, and no spontaneous regression within one year. The impact on QoL was based on the Dermatology Life Quality Index (DLQI) questionnaire (which is an easy to use and practical assessment tool). The DLQI questionnaire comprises 10 questions. It measures the impact in six domains: symptoms/feelings, daily activities, leisure, work/school, personal relationship and treatment. Each question is scored on a four-point Likert scale: 0-1 (no impact); 1-5 (small impact); 5-10 (moderate impact); 10-20 (large impact); 20-30 (very large impact). The DLQI has been validated for 32 skin conditions, including keloid scars.<sup>6</sup>

#### Statistical analyses

Data were analyzed by Epi Info™ v3.5.1 (Centers for Disease Control, Atlanta, GA, USA). Differences between proportions were compared using the Chi square test.

## Results

### Epidemiology

The prevalence of keloid scars during the study period was 3.5% from all dermatoses documented (132/3753 cases). The 3612 non-keloid patients were diagnosed for other dermatoses without keloid scars. Only 120 patients aged of 16 years old and over were included in our study.

### Demographics

The cohort the 120 patients were mostly females in 68.33% versus 31.67% of males with a sex-ratio of 0.46. The mean age of patients was 34.20 (from 16 to 63) years. Patients had mostly senior high school (48.33 %) and junior high-school (35.83 %) education. Civil servants (37.50%) and students (22.50%) were the most prevalent professional categories (Table 1).

### Clinical features

Family and personal histories of keloid scars were reported from patients in 38.8% of cases. Keloid scars were secondary to skin lesions in 88.33 % of cases. Frequent causes were skin trauma (30.00% of cases), infection (21.67 %), piercing (18.33%) and surgery (14.17%). The common sites were ears (29.17% of cases), face (18.32%), and trunk (19.17 %). Keloid scars were associated with pain in 53.33 % of cases, pruritus in 95.00% and suppuration/ulceration in 19.17%. Functional and psychological (with anxiety report by patient) disorders were noted in 33.33% and 65.83% of cases, respectively (Table 2).

### DLQI score and QoL

The DLQI score was “low” in 38.33 % “moderate” in 45.00 % of cases and “high” in 16.66 % of patients.

We observed a relationship between the DLQI score and age, sex, pain, pruritus, suppuration/ulceration and functional disorders. QoL was impacted most between 16 years and 35 years of age. QoL was affected more in females than in males. Keloid scars associated with pain, pruritus and functional disorder had a statistically significant impact on QoL (Table 3).

## Discussion

Despite research focusing on understanding keloid scars, their treatment is challenging. The factors associated with a high DLQI score for keloid scars were pain and itching, as reported by Goldstein and colleagues.<sup>7</sup> Also, itchy and painful keloids have been associated with the greatest

impairment of health-related QoL, whereas cosmetic factors such as color, thickness and irregularity of scars are less related.<sup>8,9</sup> A cross-sectional study conducted by Casemir and colleagues involving 106 patients with keloid scars but without other skin diseases showed that 48% of cases had severe emotional symptoms, and that the key determinants were pain and itching. Lemonas and colleagues found pain and pruritus to be

common physical symptoms that impact the QoL of people with keloid scars<sup>6</sup>. Carr and co-workers showed that the greatest effect on QoL was the psychological distress of living with disfiguring keloid scars.<sup>10</sup>

The DLQI is a sensitive tool to detect and evaluate the impact of keloid scars on QoL.<sup>11</sup> Morales-Sanchez *et al.* reported that the dimension that contributed most to the total DLQI score was symptoms and feel-

**Table 1. Demographic aspects of the study cohort.**

Parameter	Number (n = 120)	Percentage (%)
Sex		
Female	82	68.33
Male	38	31.67
Age (years)		
16–36	70	58.33
36–56	40	33.33
56–63	10	08.34
Level of education		
Junior high school	43	35.83
Senior High school	58	48.33
Illiterate	19	15.84
Employment		
Civil servant	45	37.50
Student	27	22.50
Farmer or laborer	33	27.50
Home worker	6	5.00
Retired	4	3.33
Military	3	2.50
Unemployed	2	1.67

**Table 2. Clinical features of the study cohort.**

	Number (n = 120)	Percentage (%)
Personal and family histories		
Yes	45	37.50
Of Keloid scars		
No	75	62.50
Spontaneous keloid scars	14	11.67
Cause of secondary keloid scars	106	88.33
Piercing	22	18.33
Hair shaving	5	4.17
Surgery	17	14.17
Skin trauma and burning	26	21.67
	36	30.00
Site		
Ear	35	29.17
Trunk	23	19.17
Limbs	17	14.17
Face	22	18.32
Pelvis and vulva	12	10.00
Shoulder	6	5.00
Abdomen	5	4.17
Symptoms		
Pain	64	53.33
Pruritus	114	95.00
Suppuration/ulceration	22	19.17
Disorders		
Functional	40	33.33
Psychological	79	65.83

ings. Their study revealed that the impact on QoL was associated with self-reporting of depressive symptoms but it did not allow them to attribute a causal relationship.<sup>12</sup> In addition, patients with keloid scars that are covered by clothing appear to have a greater psychological impact, and they adopt concealment strategies or attitudes to cope<sup>6</sup>. Scholars<sup>13</sup> have shown that the DLQI as a tool to measure QoL in patients with keloid scars can be: i) used to measure clinical outcome; ii) combined with a validated psychometric measure (Derriford Appearance Scale-24) and used as a psychological screening tool.

Some studies<sup>13</sup> have revealed that psychological distress in patients with keloid scars is related directly to patient-perceived scar severity but is unrelated to clinician-rated scar severity. Patients who perceive the scar to be severe anticipate greater social difficulties, thereby causing psychological distress.<sup>13</sup>

Bijlard and colleagues reported that pain and itching were consistently and strongly associated with health-related QoL.<sup>5</sup> Robles and colleagues reported that keloid scars are the most challenging skin diseases to treat successfully, and are associated with significant psychological impact for patients.<sup>3</sup> Nevertheless, most patients desire definitive and efficacious treatment of keloid scars. The DLQI could add valuable insights into the psychological and functional impairment of QoL.<sup>14</sup>

The small number of our study population represented one of the limitations of this study. Although, we reported statistically significant relationship between DLQI scores and QoL impact in keloid scar patients associated with pain, pruritus, supuration, age, sex and functional disorders, we cannot firmly conclude.

In Africa, the treatment needs of affected patients are not met<sup>15</sup> because of the high financial cost related to the care of keloid scars. However, understanding the evolution of keloid scar characteristics and QoL score over the course of keloid treatment allows dermatologists to provide the correct information to patients on therapeutic effects and side effects. In some cases, the DLQI could be useful to manage patients' expectations and to setup realistic treatment goals<sup>16</sup> that should take account all aspects of patients' needs.<sup>17</sup> Therefore, dermatologists should take into account signs, symptoms, individual needs, QoL and psychological wellbeing to direct curative treatment options.<sup>18</sup> Contemporaneous international clinical recommendations on scar management must also be considered.<sup>19</sup>

**Table 3. DLQI Impact on quality of life(QoL).**

Impact		P-value		
		No	Yes	
Functional Disorders	Yes	0 0%	40 -100%	P = 0.29
	No	4 (5.00%)	76 (95.00%)	
Suppuration/ulceration	Yes	0 0%	22 -100%	P = 0.43
	No	4 (4.10%)	94 (95.90%)	
Pruritus	Yes	4 (3.50%)	110 (96.50%)	P = 0.81
	No	0 (0.00%)	6 -100%	
Pain	Yes	0 (0.00%)	64 -100%	P = 0.046
	No	4 (7.00%)	52 (93.00%)	
sex	Female	2 (2.40%)	80 (97.60%)	P = 0.39
	Male	2 (5.30%)	36 (94.70%)	
Age	16 – 35ans	3 (4.30%)	67 (95.70%)	P = 0.73
	36 – 55 ans	1 (2.50%)	39 (97.50%)	
	≥ 56 ans	0 0%	10 -100%	
Psychological Impact	Yes	1 (1.15%)	86 (98.85%)	P=0.20
	No	3 (09.10%)	30 (90.90%)	

## Conclusions

Keloid scars are frequent in black African patients. Their care remains complex and combine more than 2 treatment options, due to frequent recurrences. Therefore, patients with keloid scars require accurate assessment of their QoL using DLQI scores for appropriate treatment strategy that includes physical and psychological aspects.

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