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CLINICAL MANIFESTATIONS, TREATMENT OUTCOMES, AND RELATED FACTORS OF SATISFACTION IN ACNE PATIENTS TREATED WITH CO_2 LASER COMBINED WITH TOPICAL REJU WHITE SERUM

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ABSTRACT

Background: Acne vulgaris is the most prevalent, accounting for 99% of all cases of acne. The recent advancements exploring the role of CO_2 lasers are considered a new shift towards more personalized and effective acne treatment protocols.

Objectives: To investigate the satisfaction of patients with acne vulgaris being treated by CO_2 laser in combination with Reju White serum at FOB International Cosmetic Dermatological Institute in 2024-2025.

Subjects and methods: A cross-sectional descriptive study was performed on 99 patients diagnosed with acne vulgaris and treated at FOB International Cosmetic Dermatological Institute. The clinical manifestations, adverse effects, and treatment outcomes were analyzed. The primary treatment modality was CO_2 laser combined with Reju White serum.

Results: 67,7% of patients were female, and the most common age group was 20-29 years (47,5%). Oily skin was the predominant skin type (61.6%), and the majority of patients (81.8%) had a disease duration of more than one year. After six weeks of treatment, 86.9% of patients showed good clinical improvement, and 13.1% showed moderate improvement. All patients were satisfied with the treatment; among them, 84.8% were very satisfied. Among the identified factors, treatment outcomes and treatment costs were statistically significant factors influencing patient satisfaction, with a coefficient of determination $R^2 = 0.556$ and a significance level of $p < 0.05$.

Conclusion: The combination of CO_2 laser and Reju White serum demonstrates good results in treating acne vulgaris, with minimal side effects. The majority of patients expressed high satisfaction with the treatment.

Keywords: Acne vulgaris, CO_2 laser, Reju White serum.

1. INTRODUCTION

Acne is a persistent chronic inflammatory condition of the pilosebaceous unit, which can begin during puberty and persist into adulthood, affecting 80-85% of adults [2]. Although the disease is not life-threatening, it tends to be long-lasting or recurrent. The presence of lesions often leads to post-acne hyperpigmentation and scarring, especially on the face, which not only affects aesthetics but also has a considerable psychological impact on patients [9]. Currently, CO_2 laser therapy is widely applied in acne treatment due to its rapid effects and low systemic side effects. However, studies evaluating treatment efficacy and patient satisfaction remain limited. This study aims to Describe the clinical manifestations of acne patients and their

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satisfaction with CO_2 laser combined with topical Reju White serum therapy in the FOB International Cosmetic Dermatological Institute in Can Tho in 2024-2025.

2. STUDY SUBJECTS AND METHODS

2.1. Study subjects

All patients diagnosed with acne at the FOB International Cosmetic Dermatological Institute in Can Tho from July 2024 to June 2025.

- *Inclusion criteria:* Patients diagnosed with acne primarily based on clinical features [4]. Signs may include itching, stinging, or may be asymptomatic. Typical lesions include comedones, papules, pustules, nodules, or cysts. Commonly affected areas include seborrheic regions such as the face, chest, and back. Patients must have been prescribed CO_2 laser combined with topical Reju White serum and agreed to participate in the study.

- *Exclusion criteria:* Pregnant or breastfeeding women. Patients with photosensitive disorders (e.g., dermatomyositis, porphyria, albinism). Patients with active herpes outbreaks or other ongoing infections in the treatment area should be excluded—patients with unrealistic expectations.

2.2. Study methods

- Study design: An analytical cross-sectional study was performed.

Sample size was estimated using the formula for a single proportion:

$$n = Z^2_{1-\alpha/2} \frac{p(1-p)}{d^2}$$

With:

+ n was the minimum required sample size

+ Z was the standard normal deviate at a 95% confidence level (α = 0,05), corresponding to $Z_{1-\alpha/2}$ = 1,96

+ D: The absolute precision, d = 0,06

+ p: The anticipated population proportion of satisfaction with acne treatment using the combined CO_2 laser therapy in a similar study. We chose p=90.6% as reported in the study by Le Thi Ngoc Duyen et al. [3].

+ The calculated sample size was 90.8. An additional 10% was added as a buffer, resulting in a final total of 99 samples collected.

- Sampling method: Convenience sampling. All patients who met the inclusion criteria were invited to participate in the study during the research period until the required sample size was reached.

- Study content: Description of general characteristics of the study participants, including age, gender, duration of disease, skin type, and severity of acne lesions; evaluation of treatment outcomes using CO_2 laser combined with topical Reju White serum; and investigation of factors influencing patient satisfaction with this treatment approach.

2.3. Data collection and analysis methods

Collected data were coded and analyzed using SPSS version 20.0 with appropriate statistical algorithms. Exploratory factor analysis (EFA) was conducted, along with reliability testing using Cronbach's Alpha, and multiple linear regression modeling.

3. RESULTS

Table 1. General characteristics of the study population

Characteristics		Number of patients (n)	Proportion (%)
Gender	Male	32	32,3
	Female	67	67,7
Age	< 20 years old	42	42,4
	20-29 years old	47	47,5
	≥ 30 years old	10	10,1
Skin type	Oily skin	61	61,6
	Sensitive skin	27	27,3
	Normal skin	8	8,1
	Dry skin	3	3
Duration of disease	< 1 year	18	18,2
	≥ 1 year	81	81,8
Severity	Mild	70	70,7
	Moderate	25	25,3
	Severe	4	4

Female patients accounted for the majority (67.7%), with oily skin being the most common type (61.6%). Most patients had a disease duration of one year or more (81.8%) and exhibited mild severity of lesions (70.7%).

Table 2. Clinical improvement outcomes over the weeks of treatment

Characteristics		Second week n (%)	Forth week n (%)	Sixth week n (%)
Clinical outcomes	Good	45 (45,5)	52 (52,5)	86 (86,9)
	Quite good	37 (37,4)	34 (34,4)	8 (8,1)
	Average	15 (15,1)	12 (12,1)	5 (5,0)
	Poor	2 (2)	1 (1)	0 (0)

The proportion of good improvement gradually increased throughout treatment, reaching its highest point at the sixth week (86,9%).

Table 3. Adverse effects occurring after the laser CO_2

Adverse effects		One time n (%)	Two times n (%)	Three times n (%)
Pain	Mild	21 (21,2)	36 (36,4)	52 (52,5)
	Moderate	78 (78,8)	63 (63,6)	47 (47,5)
	Severe	0 (0)	0 (0)	0 (0)
Erythema	Mild	16 (16,5)	45 (46,4)	88 (90,7)
	Moderate	77 (79,4)	45 (46,4)	9 (9,3)
	Severe	4 (4,1)	1 (1)	0 (0)

Pain and erythema were common side effects encountered during acne treatment with the CO_2 laser. Most cases of pain and erythema were mild to moderate in severity.

Table 4. Patient satisfaction after six weeks of treatment

Characteristics		Number of patients (n)	Proportion (%)
Level of satisfaction	Very satisfied	84	84,8
	Satisfied	15	15,2

84,8% of patients were very satisfied with the treatment outcome.

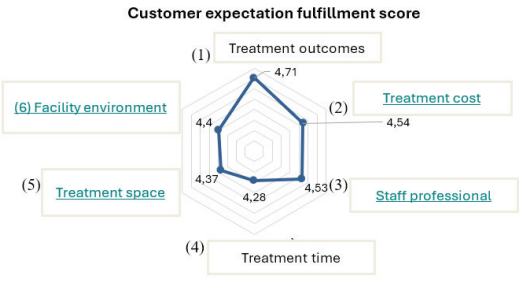

Figure 1. Comparison chart of patient satisfaction factor scores

Treatment outcomes had the highest level of satisfaction (mean score of 4.71 on a 5-point Likert scale), followed by treatment cost, staff professionalism, and professional competence. The lowest satisfaction level was related to treatment duration (mean score of 4.28).

Table 6. Regression model results of factors influencing patient satisfaction

Regression model results (Y)	Unstandardized coefficient		Significance level (Sig.)
	B	Standard error	
Constant	90.101	.477	.000
X1: Treatment outcomes	2.069	.479	.000
X2: Treatment cost	1.895	.479	.000
X3: Staff professional	.158	.479	.743
X4: Treatment duration	.850	.479	.079
X5: Treatment space	.915	.479	.059
X6: Facility environment	.050	.479	.916
R2	0,556		

The R^2 coefficient = 0.556 indicated that 55.6% of the variance in patient satisfaction was explained by the factors included in the model, suggesting a reasonably good model fit. At a significance level of $p < 0.05$, two factors were found to have a statistically significant impact on patient satisfaction: treatment outcomes and treatment cost. Other factors, including staff professionalism, treatment duration, treatment space, and Facility environment, did not show statistical significance at the 5% level.

4. DISCUSSION

The study results showed that the majority of participants were female (67.7%). The most common age group for acne patients was 20-29 years, accounting for 47.5%. This age group typically has high sebaceous gland activity and significant hormonal fluctuations, particularly in androgens, a factor that increases sebum production and creates favorable conditions for acne formation. Additionally, it may indicate that women tend to care more about skin aesthetics than men, leading to a higher rate of clinic visits. These findings are similar to those of Hoang Thi Van Anh (2024), in which 69.5% of study participants were female, and the 20-24 age group accounted for the highest proportion (34.7%) [1]. Dao Duy Thanh's 2020 study also found a predominance of female participants, with 64.5% being women [6]. Our study showed that oily skin was the most common skin type among acne patients, accounting for 60.8%, followed by sensitive skin (27.8%), normal skin (8.2%), and dry skin (3.1%). This result is consistent with the study by Do Thi Ngoc Nhi (2021), in which oily skin was also the most common (45.7%), followed by sensitive skin (28.6%), normal skin (14.3%), and dry skin (11.4%) [5]. These findings align with the pathogenesis of acne. The majority of patients had acne for more than one year, accounting for 81.8%, which supports the notion that acne tends to persist or recur and often depends on the patient's previous treatment history. This is similar to the study by Pham Thi Bao Tram (2023), in which the duration of disease ≥ 1 year accounted for the highest proportion (66.3%) [7]. In our study, mild to moderate acne lesions were dominant, with proportions of 70.7% and 25.3%, respectively, suggesting that patients today are more attentive to skincare. After six weeks of treatment, 86.9% of patients showed promising results. The most common adverse effects of CO_2 laser treatment were pain and erythema, mostly at mild to moderate levels. These results are consistent with the study by Le Thi Ngoc Duyen (2023), which recorded the highest improvement rate of 71.9% and similar adverse effects [3]. This similarity may be related to the use of gluconolactone, the main ingredient in Reju White serum. This active compound reduces corneocyte adhesion, inhibits Cutibacterium acnes, removes dead skin, and promotes skin regeneration. Research by Draelos also demonstrated that gluconolactone in moisturizers significantly supports acne treatment by reducing sensitivity, dryness, and improving the skin's structure and overall condition [8].

Multiple linear regression indicated that only two factors, treatment outcomes and treatment cost, had a statistically significant influence on overall patient satisfaction, with a coefficient of determination $R^2 = 0.556$ and $p < 0.05$. Among them, treatment outcome was the most critical factor. This indicates that when other variables are held constant, patient satisfaction changes more significantly in response to changes in treatment outcomes and costs. Therefore, to improve patient satisfaction, efforts should focus primarily on enhancing these two key factors.

5. CONCLUSION

Based on a study of 99 patients visiting and receiving treatment for acne at FOB International Cosmetic Dermatological Institute in Can Tho from 2024 to 2025 using CO_2 laser combined with topical Reju White serum, the results demonstrated good treatment effectiveness and high levels of patient satisfaction.

Among the factors examined, treatment outcomes and treatment cost were identified as having the most decisive influence on patient satisfaction, with statistically significant effects.

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