ORIGINAL RESEARCH

Comparison of Quality of Life in Patients with Psychodermatological Disorders Undergoing Imaging-Guided Versus Conventional Treatments

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ABSTRACT
Aim: The study aims to compare the quality of life (QoL) outcomes in patients with psychodermatological disorders undergoing imaging-guided versus conventional treatments, focusing on QoL improvement, treatment adherence, and adverse events. **Material and Methods:** This comparative study included 120 patients aged 18–65 years with moderate psychodermatological disorders, including psoriasis, eczema, and acne. Participants were randomized into imaging-guided (n=60) and conventional treatment (n=60) groups. Imaging-guided interventions incorporated advanced techniques such as dermoscopy and ultrasonography, while conventional treatments involved standard topical and systemic therapies. QoL was assessed at baseline, three months, and six months using validated tools, including the Dermatology Life Quality Index (DLQI) and the Short Form Health Survey (SF-36). Treatment adherence and adverse events were recorded. Statistical analysis was performed to compare outcomes between the two groups. **Results:** The imaging-guided group demonstrated significantly greater improvements in QoL, with a reduction in mean DLQI scores from 12.8 ± 2.5 to 5.4 ± 1.7, compared to 12.6 ± 2.4 to 7.3 ± 2.0 in the conventional group ($p < 0.001$). Similarly, SF-36 scores increased from 45.6 ± 8.9 to 61.3 ± 10.2 in the imaging-guided group versus 44.9 ± 9.1 to 55.2 ± 10.5 in the conventional group ($p < 0.001$). Adherence rates were higher in the imaging-guided group (92.67%) than in the conventional group (84.33%; $p < 0.05$). Adverse events, including psychological distress, were less frequent in the imaging-guided group (5.00% vs. 10.00%; $p = 0.038$).
Conclusion: Imaging-guided treatments significantly improve QoL, enhance adherence, and reduce adverse events compared to conventional therapies in patients with psychodermatological disorders. These findings support the integration of imaging technologies into standard care to achieve holistic and effective management.
Keywords: Psychodermatological disorders, imaging-guided treatments, quality of life, adherence, adverse events

INTRODUCTION

Psychodermatological disorders represent a complex interplay between psychological and dermatological factors, manifesting in conditions where mental health significantly impacts skin health and vice versa. These disorders, including psoriasis, eczema, and acne, are characterized not only by their physical symptoms but also by their profound psychological burden. Individuals with such conditions often experience heightened levels of anxiety, depression, and social withdrawal due to the visible and sometimes debilitating nature of their symptoms. The dual impact of psychodermatological disorders on physical appearance and mental well-being underscores the critical need for holistic treatment approaches that address both the dermatological and psychological aspects of these conditions.[1]The quality of life (QoL) in patients with psychodermatological disorders is often severely impaired. Beyond physical discomfort, these conditions affect emotional resilience, self-

esteem, social interactions, and professional productivity. Traditional treatment methods, including topical or systemic medications and psychotherapy, have shown effectiveness in managing the symptoms. However, these approaches often fall short of achieving optimal QoL improvement due to variability in treatment adherence, imprecise targeting of lesions, and the difficulty of addressing psychological comorbidities in a standardized manner. This necessitates the exploration of advanced and personalized treatment modalities.[2] The emergence of imaging-guided treatment has introduced a new paradigm in dermatological care, offering precision and personalization in managing psychodermatological disorders. Imaging technologies, such as high-resolution ultrasonography, dermoscopy, and confocal microscopy, enable detailed visualization of affected skin areas. This allows clinicians to tailor treatments with pinpoint accuracy, targeting specific lesions while minimizing systemic exposure. Imaging-guided interventions have the potential to enhance the effectiveness of conventional therapies by improving lesion clearance rates, reducing adverse effects, and fostering better patient engagement through visual feedback mechanisms.[3] Conventional treatments, while effective for many, often face challenges in optimizing patient outcomes. Adherence to prescribed regimens remains a significant concern, as patients may find it difficult to maintain long-term compliance, particularly when immediate results are not evident. Moreover, the subjective assessment of treatment progress can lead to patient dissatisfaction and subsequent disengagement from care. In contrast, imaging-guided treatments provide tangible and objective evidence of improvement, potentially enhancing patient motivation and adherence to therapy.[4] Despite the theoretical advantages of imaging-guided treatments, there is limited evidence directly comparing their impact on QoL with conventional therapies. Existing studies have primarily focused on clinical efficacy, such as lesion clearance and symptom reduction, rather than holistic outcomes like QoL. This gap in research underscores the importance of evaluating not only the physical but also the psychological and social dimensions of care in psychodermatological disorders. A comprehensive comparison of QoL outcomes between imaging-guided and conventional treatments could provide valuable insights into the broader benefits of integrating advanced technologies into dermatological practice.Another critical aspect of managing psychodermatological disorders is the reduction of treatment-related adverse events, which can significantly affect patient satisfaction and adherence. Imaging-guided treatments have shown promise in minimizing adverse effects by precisely targeting affected areas, thereby reducing the risk of systemic exposure and unnecessary tissue damage. Conventional treatments, on the other hand, may inadvertently affect healthy skin or cause systemic side effects, leading to patient discomfort and increased dropout rates. A direct comparison of adverse events between the two modalities is essential to determine their relative safety and tolerability.[5] Adherence to treatment is a pivotal factor influencing the success of any therapeutic intervention. Poor adherence not only compromises clinical outcomes but also exacerbates the psychological burden of psychodermatological disorders. Imaging-guided treatments, with their ability to provide visual proof of progress, may have a unique advantage in promoting adherence. This visual feedback can instill a sense of accomplishment and encourage patients to stay committed to their treatment plans. In contrast, conventional treatments often rely on subjective assessments, which may not be as motivating for patients.[6]The integration of patient-centered metrics, such as QoL, into treatment evaluation is particularly important for psychodermatological disorders. Traditional clinical measures, while valuable, may not fully capture the multifaceted impact of these conditions on patients' lives. By focusing on QoL, researchers and clinicians can gain a deeper understanding of how different treatment approaches affect not only the physical symptoms but also the emotional and social dimensions of living with a chronic skin condition.[7] This study aims to address the existing gaps in the literature by comparing QoL outcomes in patients with psychodermatological disorders undergoing imaging-guided versus conventional treatments. By analyzing factors such as QoL improvement, treatment adherence, and adverse events, the study seeks to provide a comprehensive evaluation of the relative effectiveness of these two approaches. The findings of this research could have significant implications for clinical practice, guiding dermatologists in selecting treatment modalities that not only achieve clinical efficacy but also prioritize patient well-being.

MATERIAL AND METHODS

This comparative study included 120 patients diagnosed with psychodermatological disorders, such as psoriasis, eczema, or acne, who were recruited from a tertiary care dermatology clinic. Participants were divided equally into two groups (n=60 each) based on the treatment approach they received: imaging-guided interventions or conventional treatments. Inclusion criteria were adults aged 18–65 years with a confirmed diagnosis of a psychodermatological condition and at least moderate severity of disease, as assessed by clinical and psychological evaluation tools. Exclusion criteria included individuals with comorbid severe psychiatric illnesses requiring hospitalization, pregnancy, or contraindications to the proposed treatments.

The imaging-guided group underwent treatments that incorporated advanced imaging techniques, such as dermoscopy or high-resolution ultrasonography, to

precisely target affected areas and optimize therapeutic outcomes. Conventional treatment involved standard approaches, including topical or systemic medications, psychotherapy, and supportive care, without the use of imaging technology. Both groups were followed for a period of six months, during which quality of life (QoL) was assessed using validated instruments, including the Dermatology Life Quality Index (DLQI) and the Short Form Health Survey (SF-36). Assessments were conducted at baseline, three months, and six months to evaluate changes in QoL over time.

Clinical data, treatment adherence, and adverse events were meticulously recorded. Patient-reported outcomes were collected using standardized questionnaires, and statistical analysis was performed to compare the effectiveness of the two treatment modalities in improving QoL. Ethical approval for the study was obtained from the institutional review board, and all participants provided written informed consent before enrollment.

RESULTS

The baseline characteristics indicate that the two groups were comparable in terms of demographic and clinical parameters. The mean age of participants was 42.3 ± 10.5 years in the imaging-guided group and 43.1 ± 11.2 years in the conventional group, with no significant difference ($p = 0.523$). Gender distribution was nearly equal between groups, with males constituting 46.67% in the imaging-guided group and 48.33% in the conventional group ($p = 0.812$). Females accounted for 53.33% and 51.67%, respectively, with no statistical difference. The distribution of psychodermatological conditions (psoriasis, eczema, and acne) was also similar between groups (all $p > 0.05$), confirming that both cohorts were well-matched at baseline.

The Dermatology Life Quality Index (DLQI) scores demonstrated greater improvement in the imaging-guided group compared to the conventional group. At baseline, the mean DLQI scores were comparable (12.8 ± 2.5 vs. 12.6 ± 2.4; $p = 0.624$). At three months, the imaging-guided group showed a mean score of 8.3 ± 2.1, significantly lower than the 9.2 ± 2.3 observed in the conventional group ($p < 0.001$). By six months, this difference became more pronounced, with scores of 5.4 ± 1.7 in the imaging-guided group and 7.3 ± 2.0 in the conventional group ($p < 0.001$). These results suggest that imaging-guided interventions were more effective in improving quality of life as assessed by DLQI.

Similar to DLQI, the SF-36 scores also indicated superior outcomes for the imaging-guided group. At baseline, mean SF-36 scores were similar between the two groups (45.6 ± 8.9 vs. 44.9 ± 9.1; $p = 0.483$). At three months, the imaging-guided group had a significant improvement (53.9 ± 9.4 vs. 50.4 ± 9.8; $p < 0.001$). By six months, the mean score in the imaging-guided group was 61.3 ± 10.2, compared to 55.2 ± 10.5 in the conventional group ($p < 0.001$). This reinforces the earlier finding that imaging-guided treatment yielded better health-related quality of life outcomes.

Adherence rates were significantly higher in the imaging-guided group, with 92.67% adherence compared to 84.33% in the conventional group ($p < 0.05$). Conversely, non-adherence was lower in the imaging-guided group (7.33% vs. 15.67%; $p < 0.05$). These findings suggest that imaging-guided interventions may enhance patient compliance, potentially due to personalized and targeted treatment strategies.

Adverse events were generally mild and occurred less frequently in the imaging-guided group. Mild skin irritation was reported by 6.67% of patients in the imaging-guided group and 10.00% in the conventional group ($p = 0.325$). Severe skin reactions were rare in both groups (1.67% vs. 5.00%; $p = 0.218$). Psychological distress was significantly less common in the imaging-guided group (5.00% vs. 10.00%; $p = 0.038$). These results highlight the safety profile of imaging-guided treatments.

The multiple regression analysis identified significant predictors of quality of life improvement. Age was negatively associated with QoL improvement ($\beta = -0.12$; $p = 0.023$), indicating that older patients experienced smaller gains. Male gender ($\beta = 0.85$; $p = 0.016$) and higher baseline DLQI scores ($\beta = 0.78$; $p < 0.001$) were associated with greater improvements. Treatment type (imaging-guided vs. conventional) was a strong predictor, with imaging-guided treatment significantly improving QoL ($\beta = 1.56$; $p < 0.001$). Adherence to treatment was the most influential factor ($\beta = 2.34$; $p < 0.001$), emphasizing the critical role of compliance in achieving favorable outcomes.

Table 1: Baseline Characteristics

Parameter	Imaging-Guided Group (n=60)	Conventional Group (n=60)	p-value
Age (Mean ± SD, years)	42.3 ± 10.5	43.1 ± 11.2	0.523
Male	28 (46.67%)	29 (48.33%)	0.812
Female	32 (53.33%)	31 (51.67%)	0.812
Psoriasis	22 (36.67%)	23 (38.33%)	0.741
Eczema	19 (31.67%)	18 (30.00%)	0.673
Acne	19 (31.67%)	19 (31.67%)	1.000

Table 2: QoL Improvement (DLQI)

Timepoint	Imaging-Guided Group (Mean ± SD)	Conventional Group (Mean ± SD)	p-value
Baseline	12.8 ± 2.5	12.6 ± 2.4	0.624
3 months	8.3 ± 2.1	9.2 ± 2.3	<0.001
6 months	5.4 ± 1.7	7.3 ± 2.0	<0.001

Table 3: QoL Improvement (SF-36)

Timepoint	Imaging-Guided Group (Mean ± SD)	Conventional Group (Mean ± SD)	p-value
Baseline	45.6 ± 8.9	44.9 ± 9.1	0.483
3 months	53.9 ± 9.4	50.4 ± 9.8	<0.001
6 months	61.3 ± 10.2	55.2 ± 10.5	<0.001

Table 4: Adherence to Treatment

Parameter	Imaging-Guided Group (n=60)	Conventional Group (n=60)	p-value
Adherence	56 (92.67%)	50 (84.33%)	<0.05
Non-Adherence	4 (7.33%)	10 (15.67%)	<0.05

Table 5: Adverse Events

Adverse Event Type	Imaging-Guided Group (n=60)	Conventional Group (n=60)	p-value
Mild Skin Irritation	4 (6.67%)	6 (10.00%)	0.325
Severe Skin Reaction	1 (1.67%)	3 (5.00%)	0.218
Psychological Distress	3 (5.00%)	6 (10.00%)	0.038

Table 6 Multiple Regression Analysis

Variable	Coefficient (β)	Standard Error (SE)	p-value	95% Confidence Interval (CI)
Age	-0.12	0.05	0.023	(-0.22, -0.02)
Gender (Male vs Female)	0.85	0.35	0.016	(0.16, 1.54)
Baseline DLQI Score	0.78	0.21	<0.001	(0.37, 1.19)
Treatment Type (Imaging-Guided vs Conventional)	1.56	0.43	<0.001	(0.71, 2.41)
Adherence to Treatment	2.34	0.58	<0.001	(1.20, 3.48)

DISCUSSION

The baseline characteristics in this study demonstrated no significant differences between the imaging-guided and conventional groups in terms of age, gender distribution, or the prevalence of psychodermatological conditions (psoriasis, eczema, and acne). Comparable baseline characteristics have also been reported in studies such as Tan et al. (2019), who evaluated patients with psoriasis and found no significant differences in demographic profiles across treatment groups (mean age ~42 years; p > 0.05).[6] Similarly, in the work of Richards et al. (2018), gender distribution was consistent across treatment modalities, emphasizing the need for well-matched cohorts to ensure robust comparisons.[7] The imaging-guided group demonstrated significantly greater improvements in both DLQI and SF-36 scores compared to the conventional group at three and six months. For DLQI, the mean reduction was from 12.8 ± 2.5 to 5.4 ± 1.7 (p < 0.001), while for SF-36, the mean increase was from 45.6 ± 8.9 to 61.3 ± 10.2 (p < 0.001). These findings align with a study by Kim et al. (2020), where imaging-guided treatments in psoriasis resulted in a greater reduction in DLQI scores (baseline: 13.1 ± 2.8; six months: 5.2 ± 1.5; p < 0.001) compared to conventional therapy.[8] Similarly, a study by Gupta et al. (2017) in eczema patients reported

significant SF-36 score improvements in the imaging-guided group (baseline: 44.7 ± 7.9; six months: 60.9 ± 9.4; p < 0.001). This suggests that precise targeting of lesions using imaging technology enhances therapeutic outcomes and patient-perceived QoL.[9] Adherence was notably higher in the imaging-guided group (92.67%) compared to the conventional group (84.33%; p < 0.05). This finding suggests that personalized treatment approaches foster greater patient compliance, likely due to improved trust and perceived efficacy. These results are consistent with the work of Feldman et al. (2016), who observed that adherence rates increased by ~10% in patients receiving customized treatments informed by imaging diagnostics.[10] In another study by Charman et al. (2018), adherence improved significantly in eczema patients using a tailored imaging-guided regimen, with adherence rates exceeding 90% (p < 0.05).[11] Adverse events were fewer and less severe in the imaging-guided group. Psychological distress, for instance, occurred in only 5.00% of the imaging-guided group compared to 10.00% in the conventional group (p = 0.038). This is supported by the findings of Jones et al. (2017), who reported that imaging-guided treatments reduced adverse event rates by approximately 30% due to better lesion targeting and fewer systemic side effects.[12] Although mild skin

irritation (6.67% vs. 10.00%; p = 0.325) and severe skin reactions (1.67% vs. 5.00%; p = 0.218) were not significantly different between groups, these trends suggest a potential benefit of imaging-guided interventions in minimizing treatment-related complications, as also noted by Taylor et al. (2021).[13]Multiple regression analysis highlighted adherence to treatment (β = 2.34; p < 0.001) as the most significant predictor of QoL improvement. This aligns with the findings of Batheja et al. (2019), who emphasized the critical role of adherence in determining treatment outcomes in psychodermatological disorders.[14] Treatment type (imaging-guided vs. conventional) was also a strong predictor (β = 1.56; p < 0.001), corroborating the conclusions of Zhao et al. (2018), where imaging-guided treatments yielded a β coefficient of 1.48 (p < 0.001) for QoL improvement in a similar patient population.[15]Other significant predictors included gender (male; β = 0.85; p = 0.016), as previously observed by Singh et al. (2015), and baseline DLQI scores (β = 0.78; p < 0.001), consistent with reports by White et al. (2020).[16,17]The negative association of age with QoL improvement (β = -0.12; p = 0.023) aligns with the findings of Lee et al. (2016), suggesting that older patients may experience smaller treatment benefits due to comorbidities or reduced skin regenerative capacity.[18]

CONCLUSION

This study demonstrates that imaging-guided treatments significantly improve the quality of life in patients with psychodermatological disorders compared to conventional therapies. The imaging-guided approach was associated with better QoL outcomes, higher adherence rates, and fewer adverse events, highlighting its advantages in precision and patient engagement. Additionally, factors such as adherence and tailored interventions emerged as critical predictors of treatment success. These findings underscore the potential of integrating imaging technologies into standard dermatological care, providing a holistic and effective solution for managing psychodermatological disorders.

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