

ORIGINAL ARTICLE

Effects of skin care and makeup under instructions from dermatologists on the quality of life of female patients with acne vulgaris

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ABSTRACT

Acne vulgaris significantly affects patients' quality of life (QOL) and their lives in various ways, including social behavior and body dissatisfaction. This may be heightened by acne's typical involvement of the face. We investigated whether the use of skin care and makeup could influence the QOL of affected patients without deteriorating conventional acne treatments. Fifty female patients with acne were recruited for our study. Twenty-five patients were instructed how to use skin care and cosmetics, while 25 patients received no specific instructions from dermatologists. Both groups received conventional topical and/or oral medication for acne during the study period for 4 weeks. Both groups did not show any significant difference in clinical improvement of acne severity. Two validated QOL questionnaires, World Health Organization (WHO)QOL26 and the Dermatology Life Quality Index (DLQI) were administered to all patients at first visit and 4 weeks later. The mean scores of psychological and overall domains in WHOQOL26 for patients with instructions were improved significantly, while only the overall score was significantly improved for patients without instructions. The total mean scores and all domains except work/school in DLQI for patients with instructions were improved significantly, while the total scores and all domains except discomfort for treatment in DLQI were significantly improved for patients without instructions. Thus, instructions on the use of skin care and cosmetics for female acne patients did not deteriorate acne treatment and influenced patients' QOL effectively. We therefore suggest that instructions for using skin care and cosmetics complement conventional medical treatments for acne.

Key words: acne, cosmetics, female, makeup, quality of life (QOL).

INTRODUCTION

Acne vulgaris significantly affects patients' lives in various ways, including social behavior and body dissatisfaction. It has been shown that acne's appearance is especially troublesome to patients less than 40 years old.^{1,2} This may be heightened by acne's typical involvement of the face. Because cosmetic makeup is considered a part of most women's daily routine, adult female patients undergoing acne treatment may be inconvenienced if makeup usage is restricted excessively. In fact, some derma-

tologists may still consider cosmetic makeup as an exacerbating factor for acne and many women being treated for acne continue to use makeup in spite of their dermatologists' warnings against doing so. When female acne patients feel a necessity to use makeup in their daily lives, their social activities and quality of life (QOL) may be reduced by an acne treatment plan that restricts makeup use.

Few articles have previously evaluated whether instructions from dermatologists on makeup use might influence clinical improvement by conventional acne treatment and also QOL in female acne

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Received 2 February 2006; accepted 13 June 2006

patients.³⁻⁵ We therefore investigated how the use of skin care and makeup affect the clinical improvement of female acne patients treated with conventional therapies. Furthermore, we also investigated whether, from the patients' point of view, makeup use might influence their QOL when they are given cosmetic instructions for its use by dermatologists.

STUDY SUBJECT AND STUDY DESIGNS

Subjects and methods

Fifty female adult patients (> 16 years old) with acne participated in this study. Patients were treated and assessed at the Department of Dermatology, Kagawa University between April 2004 and November 2005. Before the study's commencement, the dermatologists explained all details of the study to the participating patients. Informed consent was obtained from each patient. Pregnant or lactating women were excluded from the study.

The patients were assigned to one of two groups: 25 patients received conventional acne treatment with cosmetics instructions from dermatologists (group A), and 25 patients received acne treatment without cosmetics instructions (group B). The two groups were chosen randomly. Treatment was not altered by inclusion in this study. Group A patients were instructed on the use of cosmetics by their primary dermatologists described below, while group B patients were told to use cosmetics in their own way as usual when they felt it necessary. Clinical

assessment and QOL evaluations for patients were performed before and at the end of the study (4 weeks later).

Each patient's primary dermatologist provided instructions on the use of skin care and makeup. These instructions included how to follow a general skin-care routine, including the removal of cosmetics, face washing, moisturizing of the skin, application of foundation, and how to use "point makeup," such as eyeliner and lipstick (Table 1). During the course of acne treatment, the dermatologist initially told the patient to watch videotaped instructions in the outpatient clinic and showed her the makeup prescriptions or leaflets that explained the instructions in detail. Sample cosmetics were provided for acne patients. Videotaped instructions, makeup prescriptions and sample cosmetics reviewed in advance by the dermatologists in our department, were all provided by Nov (Tokiwa Pharmaceutical, Tokyo, Japan). All cosmetics used by the participating patients are listed in Table 2. Treatment options in acne are multiple, ranging from simple topical treatments to the use of oral antibiotics or vitamins. Authorities in Japan have not yet approved topical or oral retinoids that are commonly used in other countries and we mainly used oral and/or topical antibiotics. All patients were prescribed oral, topical or a combination of treatments. The choice of treatment depended on the interaction of disease severity and its impact on the patient, but also included issues concerning patient choice.

Table 1. How acne patients should use skin care and makeup cosmetics

Choose non-comedogenic and hypoallergenic skin care products and cosmetics.
When the cosmetics are removed, use two types of skin cleansers: first, makeup remover (wash-off formula), and then facial cleanser. Makeup remover should be applied with the fingers to the facial skin, gently blended into residual cosmetics, and washed off with plenty of water. It should not be wiped with a cotton pad, and not be rubbed too much.
Mix facial cleanser with a small amount of water on the palm, make a gentle and abundant foam, and apply it to the face.
Completely wash off the residual makeup remover and dirt with plenty of lukewarm water, taking time and applying a gentle touch.
Be careful not to wash the face too many times per day; at most twice a day is recommend.
Apply a generous amount of a moisturizing lotion and gel right after washing the face.
Choose an oil-free or low-oil content facial foundation (powder or cream) that is easy to spread. (A foundation that contains ultraviolet-(UV)-A and UV-B sunscreen is recommended.
Apply makeup (concealer, eye color, lipstick and cheek color) only to the areas that the patients want to emphasize.

Table 2. Cosmetic products used for tests

Skincare products: all non-comedogenic formula, makeup remover (gel type), facial cleanser (powder type), moisturizing lotion, moisturizing gel.
Makeup products: hypoallergenic, sunscreen, foundation (powder or cream), face powder, concealer, cheek color, eye color, lipstick

Evaluation of severity of acne vulgaris

At baseline and at the end of the study, the primary dermatologist consulted with each patient and classified the severity of acne vulgaris using Plewig and Kligman's grade method.⁶ Comedonal type (C) and papulopustular (P) type are classified by the characteristics of the rash. C type has predominantly open and closed comedones. Some inflammatory lesions are usually present but are not impressive in size or number. P type has myriad papules and pustules with an admixture of comedones. The inflammatory lesions are dominant. Acne severity was measured by the number of eruptions, grade 1–4, on the left- and right-side of the face, respectively. (i.e. grade 1: ≤ 9 ; grade 2: 10–25; grade 3: 26–50; grade 4: ≥ 51) Combining these two parameters, we rated the severity as P1, P2, P3, P4, C1, C2, C3 and C4. The change in acne severity through the study was classified into four categories: "Markedly improved", "Improved", "Unchanged" and "Exacerbated". When the patient showed more than a two-step improvement (i.e. C3→C1) or a change in the characteristics of the rash (i.e. P→C), we classified this patient as "Markedly improved", and a one-step improvement as "Improved". Patients with acne conglobata were excluded from this study. Patients were all assessed by the same dermatologists.

Evaluation of safety

At the conclusion of the study, the dermatologists evaluated the safety in both groups.

Evaluation of QOL

We prepared two types of self-administered QOL questionnaires, the World Health Organization (WHO)QOL26⁷ and the Dermatology Life Quality Index (DLQI).⁸ All participating patients completed the questionnaires at the initiation and at the end of the study. The WHOQOL26, a generic health-related QOL evaluation, measures overall QOL and four separate domains of health, including physical, psychological, social relationships, and environment. Each question is graded 1–5 points. The lower the score, the greater the disability. The DLQI consists of 11 questions covering the aspects of life most commonly mentioned when 120 dermatology patients were asked how their skin disease affected them. DLQI is composed of 10 categories with six domains:

symptoms and feelings, daily activities, leisure, work or school activities, personal relationships, and discomfort of treatment. Total scores can range 0–30; the higher the score, the greater the disability. Changes in QOL scores for each questionnaire were analyzed using the Wilcoxon signed rank test at 5% of the critical ratio (P -value). A P -value of less than 0.05 ($P < 0.05$) was considered statistically significant.

RESULTS

Demographic and baseline characteristics of patients

We analyzed a total of 50 patients, with 25 patients in group A and 25 patients in group B. The demographic and baseline characteristics of participating patients are shown in Table 3. All variables, according to the characteristic type, were evaluated using a χ^2 test at 5% of the critical ratio for each analysis; no biased variables were observed.

Treatment of patients

Treatment options in acne are multiple, ranging from simple topical treatments (clindamycin gel, clindamycin lotion, nadifloxacin cream) to the use of oral antibiotics (minocycline hydrochloride, roxithromycin) or vitamins (B₂, B₆, C). There was no statistically significant difference on medications used by the patients by Wilcoxon rank sum test (topical treatment: $P = 0.55$; oral antibiotics: $P = 0.14$).

Clinical evaluation

Changes in the disease severity

The two groups were not significantly different in disease changes (Table 4). Figure 1 shows the clinical presentation of a patient from group A with conventional acne treatment and the use of cosmetic products under the instructions for skin care and makeup from the dermatologists (a: before; b: after).

Safety

None of the patients reported side-effects from use of either cosmetic products or conventional acne medication. All 50 patients completed the study.

Table 3. Background of analyzed cases

Group characteristics		Group A <i>n</i> = 25		Group B <i>n</i> = 25	
	1. Age (years)	24 ± 3		25 ± 5	
	testing for independence		$\chi^2 = 24.82$ (df = 16), <i>P</i> = 0.07		
	2. Duration of acne(years)	7 ± 4		4 ± 4	
	testing for independence		$\chi^2 = 23.73$ (df = 23), <i>P</i> = 0.42		
	3. Complications				
	No	18 (72%)		19 (76%)	
	Yes	7 (28%)		6 (24%)	
	testing for independence		$\chi^2 = 0.10$ (df = 1), <i>P</i> = 0.75		
Severity of acne (right side)	C1	3 (12%)		5 (20%)	
	C2	7 (28%)		8 (32%)	
	C3	2 (8%)		0 (0%)	
	C4	0 (0%)		0 (0%)	
	P1	3 (12%)		3 (12%)	
	P2	10 (40%)		7 (28%)	
	P3	0 (0%)		2 (8%)	
	P4	0 (0%)		0 (0%)	
	testing for independence		$\chi^2 = 5.10$ (df = 5), <i>P</i> = 0.40		
	C1	5 (20%)		6 (24%)	
Severity of acne (left side)	C2	5 (20%)		8 (32%)	
	C3	1 (4%)		0 (0%)	
	C4	0 (0%)		0 (0%)	
	P1	5 (20%)		1 (4%)	
	P2	7 (28%)		8 (32%)	
	P3	2 (8%)		2 (8%)	
	P4	0 (0%)		0 (0%)	
	testing for independence		$\chi^2 = 4.52$ (df = 5), <i>P</i> = 0.48		

df, degree of freedom.

Table 4. Degree of improvement of rash

Group	Group A (<i>n</i> = 25)		Group B (<i>n</i> = 25)		
	No. of patients	%	No. of patients	%	
Severity of acne (right side)	Markedly improved	5	20	8	32
	Improved	10	40	8	32
	Unchanged	10	40	9	36
	Exacerbated	0	0	0	0
testing for independence				$\chi^2 = 0.97$ (df = 2), <i>P</i> = 0.62	
Severity of acne (left side)	Markedly improved	9	36	7	28
	Improved	8	32	9	36
	Unchanged	8	32	9	36
	Exacerbated	0	0	0	0
testing for independence				$\chi^2 = 0.37$ (df = 2), <i>P</i> = 0.83	

df: degree of freedom.

Evaluation of QOL

The results obtained from the WHOQOL26 are shown in Table 5. Statistically significant improvements were observed in the psychological domain and in overall QOL in group A. A statistically significant difference was observed only in the overall QOL in group B. When the two groups were compared before

and after the study, the QOL score of WHOQOL26 were not significantly different by Wilcoxon rank-sum test (data not shown). The mean score for all questions of WHOQOL26 obtained from all 50 participants at the beginning of our study was nearly equivalent to that obtained from healthy Japanese women in the 20–29 age group.⁹ The value reported

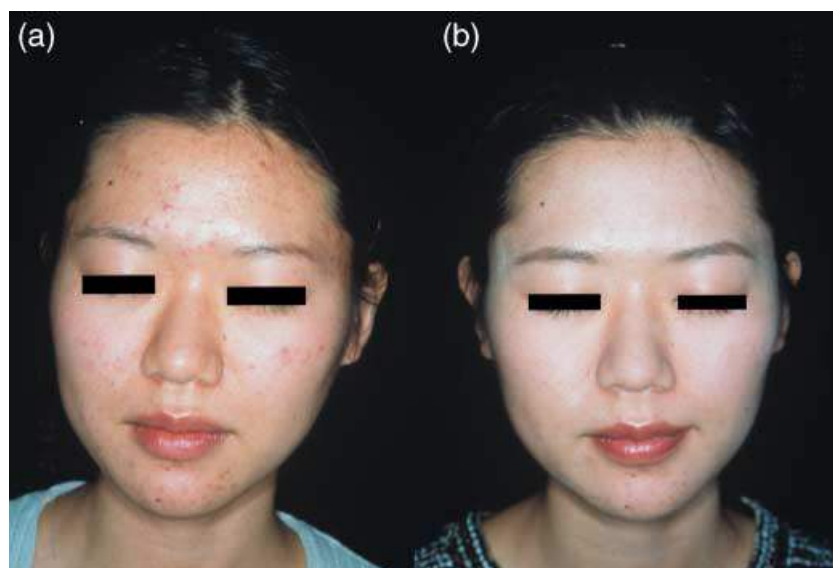


Figure 1. The clinical presentation of a patient from group A with medical treatment and the use of the instructions for skin care and makeup (a: before; b: after).

Table 5. Score of World Health Organization quality of life (WHOQOL)26

	Group A		Group B	
	Before	4 weeks after	Before	4 weeks after
Physical domain	3.23 ± 0.62 N.S. (<i>P</i> = 0.22)	3.35 ± 0.46	3.45 ± 0.55 N.S. (<i>P</i> = 0.37)	3.54 ± 0.45
Psychological domain	3.09 ± 0.69 (<i>P</i> < 0.05)	3.26 ± 0.59	3.21 ± 0.62 N.S. (<i>P</i> = 0.13)	3.29 ± 0.60
Social relationships	3.65 ± 0.55 N.S. (<i>P</i> = 1.00)	3.65 ± 0.49	3.68 ± 0.50 N.S. (<i>P</i> = 0.80)	3.64 ± 0.61
Environment domain	3.35 ± 0.53 N.S. (<i>P</i> = 0.46)	3.42 ± 0.51	3.42 ± 0.49 N.S. (<i>P</i> = 0.67)	3.45 ± 0.49
Overall QOL (general QOL)	3.04 ± 0.88 (<i>P</i> < 0.01)	3.38 ± 0.77	2.78 ± 0.76 (<i>P</i> < 0.01)	3.18 ± 0.72
Total mean score	3.27 ± 0.54 N.S. (<i>P</i> = 0.14)	3.39 ± 0.45	3.36 ± 0.44 N.S. (<i>P</i> = 0.24)	3.44 ± 0.46

Wilcoxon signed rank test. N.S., non significant.

by Nakane *et al.* was 3.33 ± 0.49 and our scores were 3.27 ± 0.54 , 3.36 ± 0.44 in group A and B, respectively. However, patients in group A had slightly lower initial scores (3.09 ± 0.69) than those of healthy adult women in the psychological domain of the WHOQOL26 (3.30 ± 0.64). Interestingly enough, the score for the psychological domain of WHOQOL26 was significantly improved only in group A at the end of the study. This result suggests that instructions on skin care and makeup use may have a favorable effect on the psychological condition or interpersonal relationships of female acne patients.

The results obtained from the DLQI are shown in Table 6. Of the 25 patients in group A, statistically significant differences were observed in domains including symptoms and feelings, daily activities, leisure, personal relationships, discomfort of treatment, and the total mean score. Of the 25 patients in group B, statistically significant differences were observed in symptoms and feelings, daily activities, leisure, work/school, personal relationships, and the total mean score. When these two groups were compared before the study, the QOL score of DLQI was not significantly different. In contrast, after the study, patients in the group A were significantly

Table 6. Dermatology Life Quality Index (DLQI) skin-disease specific questionnaire score

	Group A		Group B	
	Before	4 weeks after	Before	4 weeks after
Symptoms, feelings	3.16 ± 1.49 (<i>P</i> < 0.001)	1.52 ± 1.08	2.60 ± 1.58 (<i>P</i> < 0.001)	1.52 ± 1.16
Daily activities	1.76 ± 1.81 (<i>P</i> < 0.01)	0.56 ± 0.77	1.20 ± 1.73 (<i>P</i> < 0.01)	0.64 ± 1.25
Leisure	1.20 ± 0.96 (<i>P</i> < 0.05)	0.72 ± 0.84	1.12 ± 1.48 (<i>P</i> < 0.01)	0.52 ± 1.08
Work/school	0.68 ± 0.69 N.S. (<i>P</i> = 0.20)	0.48 ± 0.51	0.48 ± 0.67 (<i>P</i> < 0.01)	0.20 ± 0.65
Personal relationships	0.68 ± 0.90 (<i>P</i> < 0.01)	0.24 ± 0.44	0.48 ± 1.19 (<i>P</i> < 0.05)	0.16 ± 0.55
Discomfort of treatment	0.76 ± 0.83 (<i>P</i> < 0.01)	0.36 ± 0.49	0.40 ± 0.65 N.S. (<i>P</i> = 0.16)	0.20 ± 0.50
Total mean score	8.24 ± 5.06 (<i>P</i> < 0.001)	3.88 ± 2.79	6.24 ± 6.06 (<i>P</i> < 0.001)	3.24 ± 4.36

Wilcoxon signed rank test.

higher than group B in the score only for the work/school domain by Wilcoxon rank sum test (data not shown). The DLQI measure specific to skin disease was more responsive to change compared with the generic measure of WHOQOL26.

DISCUSSION

Most skin diseases are considered less severe or life threatening than other organ disorders. However, because the cutaneous lesions are often exposed to the public, they can greatly affect a patient's emotional state and QOL. Articles evaluating the QOL of patients with atopic dermatitis or psoriasis vulgaris have increased in recent years, and some research has reported that the decreased QOL scores of these patients resembles those of patients suffering from grade I cardiac failure or rheumatoid arthritis.^{10,11}

Many acne patients, often suffering from this chronic condition since their teens, also sustain serious psychological damage from the disease.¹² Mallon *et al.* reported that significantly decreased QOL scores were observed in 111 patients (male: female = 3:2) suffering from moderate to severe acne.¹³ In particular, the degree of QOL decrease from a social or psychological standpoint was equivalent to QOL of patients with asthma, diabetes mellitus and arthritis by the evaluation with another generic measure, the short form 36 instrument (SF-36). It

also has been demonstrated that the DLQI and all domains of the SF-36 improved significantly when clinical acne grade improved substantially with effective acne treatments.¹⁴ In addition to medical therapies, patients with skin disorders should request that dermatologists provide a variety of medically related approaches, such as instructions regarding lifestyle changes.

Our study focused on adult female patients with acne, most of whom use makeup every day. Makeup is part of many women's daily routine, including those with acne. Therefore, any unnecessary restrictions on the use of makeup may negatively affect the QOL of these patients. The current study suggests that with the instructions and the supervision from a dermatologist, makeup does not deteriorate standard acne treatment, and does not negatively affect the QOL of adult female acne patients. Our data are similar to those obtained from other reports,³⁻⁵ suggesting that makeup use that is instructed and supervised by cosmeticians or dermatologists favorably affects the QOL of acne patients. However, the current study focused particularly on two groups: conventional acne treatment with or without cosmetics instructions from dermatologists. In this study, dermatologists gave female acne patients the instructions for skin care and cosmetics using videotapes and makeup prescriptions for easy understanding. This study also adopted simple methods for QOL evaluations so that patients

could easily understand the contents of the QOL questionnaire and answer the questions quickly. The assessment of QOL is increasingly being used as a measurement tool in the healthcare outcomes. There are now various systems available for evaluating QOL, ranging from the general to the disease-specific. As a general health-related QOL evaluation, WHOQOL26 was used here. On the other hand, DLQI, proposed by Finlay *et al.*¹⁵ in 1994, is an evaluation of QOL specific to skin diseases. Combining WHOQOL26 with DLQI enabled us to evaluate patients from both a simple and a multi-angled approach. Several previous reports indicated that the combined application of these two types of questionnaire is useful for the evaluation of QOL for patients with skin diseases, including atopic dermatitis, acne and psoriasis vulgaris.¹⁶

The use of a variety of kinds of QOL questionnaire may allow us to detect the status of female acne patients more precisely; however, for daily use in a busy clinic, two types of QOL questionnaire used here should be appropriate.

In general, patients with skin disorders are more capable of performing routine activities than patients with other chronic or age-related dysfunctions, such as cancer or diabetes mellitus. Though patients in group A had slightly lower initial scores than those of healthy adult women in the psychological domain in the WHOQOL26, these scores significantly improved by the end of the study. These psychological QOL scores may reflect how patients feel about their appearance. The results from the two types of QOL evaluation indicate that instructions on skin care and makeup use may have a favorable effect on the psychological conditions or interpersonal relationships of female acne patients. In addition, the acne patients receiving cosmetic instructions from dermatologists seemed to show more satisfaction and improvement in their daily activities and personal relationships. In our preliminary survey, it has been shown that more than 80% of female acne patients used skin-care and makeup products as a matter of daily routine in their life. So, after receiving instructions from dermatologists, the patients' attitude for the use of cosmetics was altered properly and also possibly psychosocial distress relieved to some extent. This may affect not only the improvement of skin lesions but also patients' QOL. These results demonstrate

that cosmetic instruction and the makeup itself have a positive affect on their self-esteem.

Two methodological considerations of the present study should be noted: the sample size of 50 patients limits the extent to which our conclusions can be generalized and all participating patients in this study were Japanese. In order to assess the clinical severity of acne we used Plewig and Kligman's grade method, which has not been independently validated in Japan.

In conclusion, the instructions on the use of skin care and cosmetics from a dermatologist did not deteriorate acne treatment for female patients and effectively influenced their QOL in some ways. We therefore suggest that it is important for dermatologists to provide or arrange for proper instructions on the use of skin-care and cosmetic products with the addition of conventional medication for acne. Further studies with larger samples of patients should test our conclusions.

ACKNOWLEDGMENTS

We thank Linda S. Restino, RN, MS, and Alla Gruman, MD, for their critical review and help in the preparation of this manuscript. The authors have no relevant financial interest in this paper.

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