

Treatment-Seeking Behaviors and Related Epidemiological Features in Korean Acne Patients

Little is known about the treatment-seeking behaviors of acne patients, especially Asian acne patients. This study was performed to obtain detailed information about the treatment-seeking behaviors in Korean acne patients. Patients who visited the dermatology departments at 17 university hospitals completed a self-administered questionnaire. Most patients obtained information about acne from doctors or the Internet. The most important criteria for selecting a treatment method or choosing a particular clinic were effectiveness and accessibility. Patients used traditional medicine, visited beauty clinics, drank more water, and used over-the-counter topical agents more frequently than they sought doctors during the worsening period. The degree of satisfaction in treatment was found to depend on the total cost of treatment, number of places visited, site affected by acne, and emotional stress. Those who had experienced a side effect tended to have been treated for longer, to have paid more for treatment, and to have an associated skin disease. Treatments prescribed by dermatology clinics had the lowest aggravating rate, although improvement rates for family medicine clinics were also fairly high. This is the first study to investigate in detail the demographic features and characteristics of the treatment-seeking behaviors of acne patients in Asia.

Key Words : *Acne Vulgaris; Therapy; Epidemiology*

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Received : 23 April 2008
Accepted : 11 July 2008

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*This study was supported by Hanmi grant 2006 from the Korean Dermatological Association.

INTRODUCTION

Acne is an extremely common skin disease, and thus, individuals have various beliefs and perceptions about its treatment methods. In a recent community-based study, 68% of male and 66.8% of female teenage participants were reported to have acne (1). Although less frequently encountered than in adolescence, a significant number of adults, 20 yr of age or older, also have acne (1). In many cases, acne is regarded as a physiologic phenomenon, which is likely to regress spontaneously after adolescence. However, in some individuals, acne persists and substantially increases the likelihood of scarring (2).

Because acne is a common skin condition, it has a great impact on quality of life. Thus, a detailed understanding of its more general aspects is important (3). Numerous clinical research studies have been undertaken on its epidemiology in western countries (1, 4, 5). However, comparatively few have been undertaken in Asian populations (6, 7). In particular, no

study has been conducted in Asia on treatment-seeking behavior, the factors that have an influence on the treatment method selection or on levels of satisfaction with previous therapies.

The primary objective of this study was to characterize and analyze treatment-seeking behaviors in Korean acne patients. In particular, this study attempted to identify correlations between variables and to determine common and differing factors between Asians and Caucasians.

MATERIALS AND METHODS

The study was conducted on new acne patients who visited the dermatology departments at 17 university hospitals (each with more than 500 hospital beds) between January and December 2006. Total of 1,400 questionnaires administered, and 1,236 were completed (756 female, 480 male; M:F ratio 1:1.6).

These questionnaires contained two sections: one for patients

and the other for the attending dermatologists. Participants were asked to answer questions on the following; source of treatment information, factors influencing treatment choice, management method during acne flare-up, maintenance method after treatment, and degree of satisfaction with previous therapy. Dermatologists asked patients to answer questions about the places that they had visited for treatment and questions regarding treatment efficacy. And dermatologists were instructed to decide severity of their acne patients according to the Korean acne grading system (8). This questionnaire was administered under the supervision of a dermatologist in each hospital.

Statistical analysis

Statistical analysis was performed using the Statistical Package for the Social Sciences (SPSS), version 12. The t-test was used to determine those of quantitative variables; total cost of acne treatment and treatment duration. And the chi-squared test was mainly used in this study to determine the statistical significances of qualitative variables; all variables other than total cost of acne treatment and treatment duration. *p* values of less than 0.05 were considered to be statistically significant.

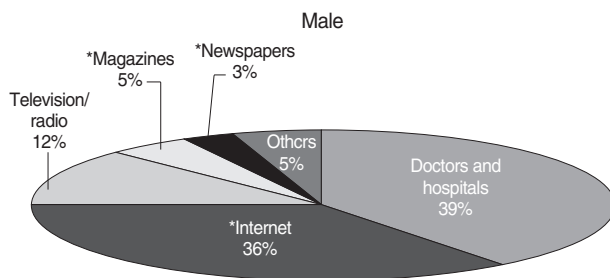
RESULTS

Epidemiology

The questionnaire completed for 1,236 acne patients, 480 were male (39%) and 756 were female (61%). The mean age of patients was 23.1 yr in male and 24.5 yr in female. In respect of severity, mild form (grade 1, 2) was 55.9%, moderate form (grade 3, 4) was 40.6%, and severe form (grade 5, 6) was 3.5%.

Source of information

Patients most frequently obtained general information on acne from doctors and hospitals (39.5%), and from the Internet (35.9%). Other sources included television/radio (11.8%),



magazines (7%), and newspapers (5.1%). Male patients were more likely to obtain information from the internet than female patients, and female patients were more likely to obtain information from magazines and newspapers (Fig. 1) (*p*<0.05).

Priority on choosing acne treatment

Most patients considered treatment efficacy as the most important factor when choosing an acne treatment modality (74%); other factors included cost (8%), recurrence (6%), duration (4%), time spent (4%), and side effects (4%). No gender difference was found.

Accessibility (40%) was the first consideration when visiting hospitals for acne treatment, followed by cost (23%), and perceived hospital status based on the Internet (21%), and television/radio (16%).

Acne treatment during the worsening period

The most frequently reported method of managing acne during the aggravation period was traditional medicine (90%), followed by beauty clinics (89%), drinking more water (87%), and using non-prescriptive topical agents (86%). Sixty-eight percent of patients visited hospitals, 67% squeezed pimples,

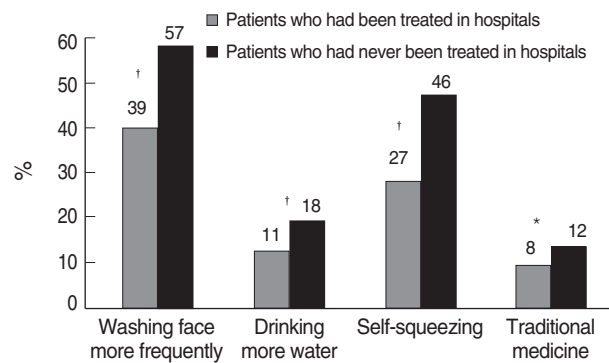


Fig. 2. Acne treatment during the worsening period. A statistically significant difference between acne patients who had been treated and those who had never been treated in a hospital. *, *p*<0.05 between two groups; †, *p*<0.01 between two groups.

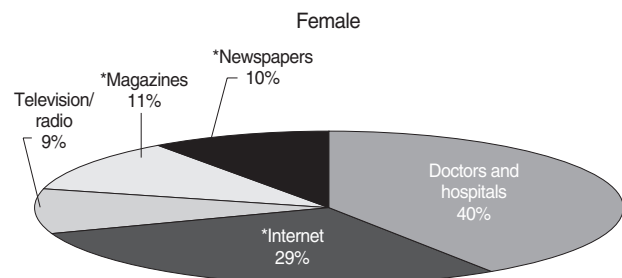


Fig. 1. Sources of information. **p*<0.05 between male and female acne patients.

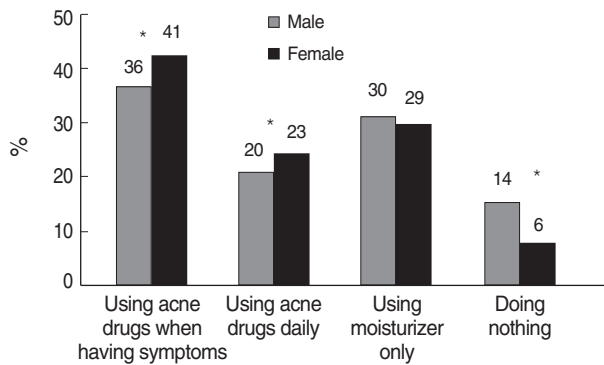


Fig. 3. Maintenance method after improvement. A statistically significant difference between male and female acne patients (* $p < 0.05$ between male and female).

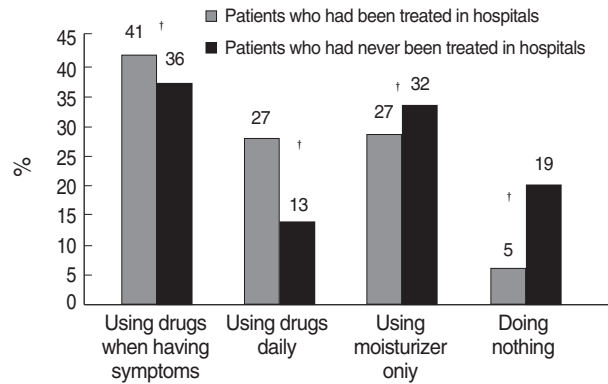


Fig. 4. Maintenance method after improvement. Statistical difference between acne patients that had been treated or had never been treated in a hospital. †, $p < 0.05$ between two groups.

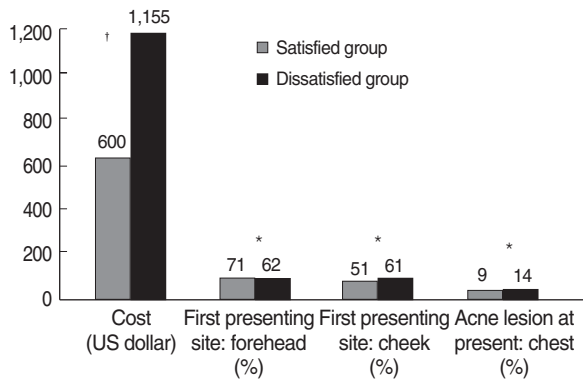


Fig. 5. Differences between patients who were satisfied or dissatisfied with treatment results. * $p < 0.05$ and † $p < 0.01$ between the groups.

and 55% washed their faces more frequently. A difference was found between male and female acne patients in terms of acne management methods during the aggravating period. Male patients washed their faces more frequently than female patients ($p < 0.01$), but female patients visited hospital ($p < 0.01$) and beauty clinics ($p < 0.05$) more frequently than male patients.

In addition, a statistical difference was found, in terms of method of self-treatment, between those that had been treated by a dermatologist at some time and those with no history of treatment (Fig. 2). The group with a history of dermatologist treatment were less dependent on facial washing (39% vs. 57%, $p < 0.01$), drinking water (11% vs. 18%, $p < 0.01$), squeezing pimples (27% vs. 46%, $p < 0.01$), and on traditional medicine (8% vs. 12%, $p < 0.05$).

Maintenance after treatment

The methods most commonly used after improvement were (in decreasing order) to use acne drugs when acne later became aggravated, moisturizer, acne medications daily, and doing nothing (Fig. 3). Female patients used acne drugs more often than male patients, and male patients were more likely to do nothing. Forty-one percent of female patients used acne drugs

when they had symptoms and 23% used drugs daily. On the other hand, 36% of male patients used acne drugs when they had symptoms and 20% used drugs daily ($p < 0.01$).

In addition, those who had experienced hospital treatment and those who had not were found to differ (Fig. 4). Those with a treatment history were found to be more likely to use acne drugs when symptoms were aggravated (41% vs. 36%, $p < 0.01$) or daily (27% vs. 13%, $p < 0.01$), whereas those with no relevant history were more likely to use moisturizer (32% vs. 27%, $p < 0.01$) or do nothing (19% vs. 5%, $p < 0.01$).

Satisfaction with acne treatment

Seventy-seven percent of patients were unsatisfied with the results of acne treatment. The major reasons for dissatisfaction were ineffectiveness (84%), cost (7%), and side effects (4%).

The average total cost of acne treatment was higher in dissatisfied patients than in satisfied patients (1,155 vs. 699 US dollar, $p < 0.01$) (Fig. 5). Moreover, the forehead was the first presenting site in 71% of satisfied patients and in 62% of dissatisfied patients ($p < 0.05$). On the other hand, cheeks were more often the first presenting area in dissatisfied patients (61% vs. 51%) ($p < 0.05$). When completing the questionnaire, 14% of dissatisfied and 9% of satisfied patients had chest lesions ($p < 0.05$).

Seventy-seven percent of satisfied patients and 87% of dissatisfied patients thought that emotional stress aggravates acne ($p < 0.01$).

Side effects of treatment

Seventy-nine percent of patients had never experienced side effects. The mean treatment duration was longer in patients who had experienced a side effect than in patients who had not (23.1 months vs. 11.7 months, $p < 0.01$) (Fig. 6). The mean cost of acne treatment was much higher in patients who had experienced a side effect (2,352 vs. 713 US dollars) ($p < 0.01$). Other associated skin diseases were more common

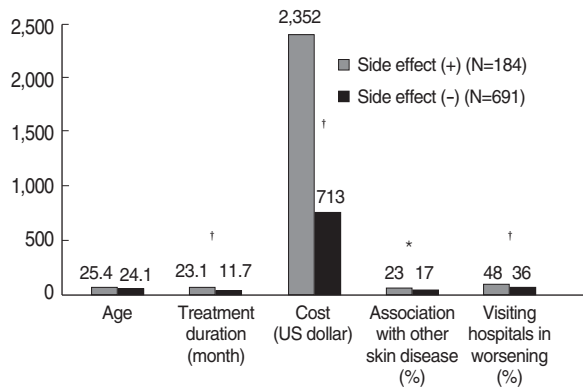


Fig. 6. Differences between patients who had or had not experienced side effects (* $p < 0.05$ and † $p < 0.01$).

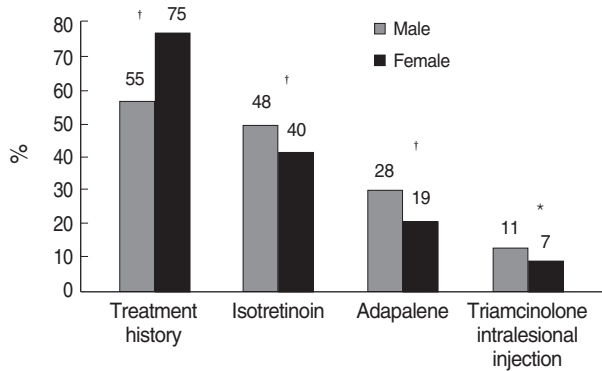


Fig. 8. Difference between male and female patients by previous treatment. * $p < 0.05$ and † $p < 0.01$ between male and female acne patients.

in patients who had experienced a side effect (23% vs. 17%) ($p < 0.05$). When acne lesions were aggravated, people with no history of side effect more frequently sought a doctor (48% vs. 36%, $p < 0.01$).

Previous treatment history

Eighty-five percent of male patients had sought advice or treatment from a dermatologist before their university hospital visit, and 6% had visited beauty clinics, 4% oriental medicine clinics, 3% internal medicine clinic, and 2% family medicine clinics. For women, 72% had previously sought advice from a dermatologist, 19% had visited aesthetics, 7% had sought treatment from an oriental medicine clinic, 1% had visited a clinic of internal medicine, and 1% had visited a family medicine clinic. Female patients were found to have more frequently visited oriental medicine clinics and beauty clinics.

With respect to progression after treatment, the percentage of patients who considered their symptoms improved was highest among those who visited a family medicine clinic (32%), followed by patients who visited a dermatologist (29%), and patients who visited an oriental medicine clinic (15%), beau-

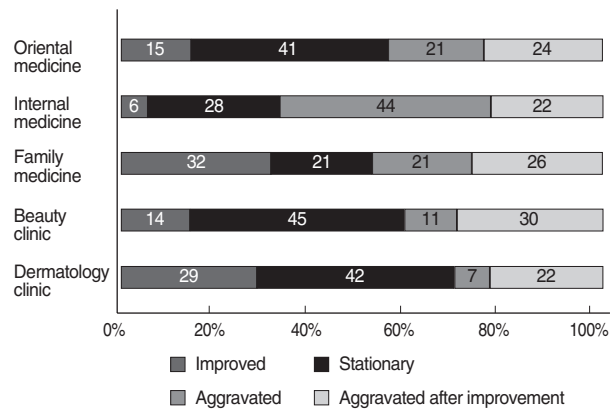


Fig. 7. Results of treatment at previously visited centers. Percentages of patients who were aggravated by treatment were the lowest for dermatology clinics.

ty clinics (14%), and internal medicine clinics (6%). However, the percentages of patients that found their condition aggravated by treatment was highest for internal medicine clinics (66%), followed by family medicine clinics (47%), oriental medicine clinics (45%), beauty clinics (41%), and finally by dermatology clinics (29%) (Fig. 7).

Gender differences concerning previous acne treatments are summarized in Fig. 8. More women had been previously treated than men (75% vs. 55%, $p < 0.05$). On the other hand, men had more frequently used isotretinoin or adapalene ($p < 0.01$), and men had been treated with triamcinolone intralesional injections more often than women ($p < 0.05$).

DISCUSSION

Although acne is one of the most common skin diseases, few studies have been conducted to determine how patients obtain information about acne, decide on how to obtain treatment or on how satisfied patients are with previous therapy. In particular, little information is available on these issues for Asians. Even though Tan et al. in Singapore (6) and Yeung et al. in Hong Kong (7) have undertaken community-based epidemiologic studies of acne in Asia, treatment-seeking was not investigated in detail. The present study sought to obtain basic information on treatment-seeking behaviors, previous treatment histories, reasons for selecting specific treatment methods, durations and costs of acne treatments, and degrees of satisfaction with therapy among Korean patients.

Merely 40% of acne patients had obtained general information about acne from doctors or hospitals (39.5%), whereas a considerable number obtained information from the Internet (35.9%). This result is probably due, in part, to the popularity of the Internet in Korea, and the fact that acne is most prevalent among adolescents and young adults (9). Other cited sources of acne information were television/radio (11.8%), mag-

azines (7%), and newspapers (5.1%). Moreover, as has been reported previously, women were found to be more likely to seek information in magazines than men (10). Because our subjects were referred patients, our results are unlikely to reflect the attitudes, behaviors, or histories of the general population. Actually, in a community-based survey conducted in New Zealand, it was found that most people obtained information from television or parents, and not from doctors (11).

The most important factor in terms of choosing an acne treatment modality was treatment efficacy (74%), which was followed by cost (8%). Accessibility was found to be the most important factor when choosing an acne clinic, also followed by cost. In addition, name value as determined by the Internet or television and radio was also considered an important factor. We attribute these findings to the busy schedules of young people today, as most of our subjects were either students or working professionals. Thus, the patients preferred nearby, cheaper clinics, preferably with a well-known name.

During periods of exacerbation, acne patients were found to favor traditional medicines, to visit beauty clinics, to drink more water, and to use non-prescribed topical treatments more frequently than they sought a doctor's advice. This result demonstrates that non-medical therapies for acne are prevalent in Korea, and that the population is generally uneducated about acne and its consequences. The present study was performed in seventeen university-based hospitals. Had this been a community-based study, we believe that a greater proportion of acne sufferers would have used non-medical treatments or done nothing, as it has been previously reported that only a minority of acne patients seek medical attention (3, 12, 13). In the present study, patients with experience of being treated in a hospital tended to less frequently adopt self-treatments like washing the face or self-extraction. This suggests that hospital-treated patients have more accurate information about acne. It is also possible that more educated patients (who know that self-treatment can cause sequelae) prefer to visit hospitals during acne exacerbations.

In terms of maintenance methods after an improvement, female patients favored medication use (daily or during exacerbations), whereas male patients favored using moisturizer or doing nothing. This result reflects the fact that treatment compliance may be higher in female patients than in male patient. In addition, differences were found between those that have been and not been previously treated at hospital. Those with a history of hospital treatment used acne drugs more frequently, probably because they knew the effectiveness of prescription drugs through contact with doctors.

Seventy-seven percent of patients were displeased with previous acne therapy, which is because of the nature of our cohort, i.e., many may have been referred because they were dissatisfied with or unresponsive to previous therapy. The most common reason given for dissatisfaction with acne treatment was ineffectiveness, which corresponds with our finding that the most important factor in terms of choosing a particular

treatment is efficacy. Other reasons given for treatment dissatisfaction were cost and side effects. Dissatisfied patients considered that the total cost of acne treatment was high, and had received treatment from more treatment centers than satisfied patients. In addition, high costs can contribute to treatment dissatisfaction and produce a vicious cycle. Sites first affected by acne can also affect the degree of satisfaction. For example, those first affected on cheeks tended to be more dissatisfied with treatment results than those initially affected on the forehead. In addition, those with acne lesions on the chest tended to be dissatisfied with treatment results. In Korean patients, the most severely affected site on the face has been reported to be the cheeks (14). Moreover, acne tends to appear initially on the face and then to spread to the anterior chest or back (9). Severe acne is probably more difficult to cure than mild acne, and is associated with more chest lesions. Furthermore, it may be a consequence of inadequate treatment. Thus, patients who first developed acne on the cheeks with chest lesions tend to be displeased with treatment.

It is well known that emotional stress can greatly aggravate acne (3, 15). Rapp et al. reported that those with a tendency to regularly become angry also tend to have poor skin-quality and to be dissatisfied with treatment (16). Similarly, in the present study, the patients who were dissatisfied with treatment tended to experience acne flare-ups when emotionally stressed. Thus, those more exposed to stress are more likely to experience acne flare-ups and be more dissatisfied with treatment. One-fifth of the patients that submitted questionnaires had experienced treatment side effects, and these patients had been treated for longer and spent considerably more money on acne therapies. Longer duration or more expenses can indicate that the patients have been treated with variable methods including self-treatment or over-the-counter therapy. So, patients who had been treated with multiple methods have a greater chance of experiencing side effects. In addition, those who had experienced a side effect also tended to have a history of other skin diseases, which could have been because they were more concerned about skin problems.

Patients visited dermatology clinics most frequently before referral to a university hospital. They also visited beauty clinics, oriental medicine clinics, family medicine clinics, and internal medicine clinics. Female patients tended to visit beauty clinics and oriental medicine clinics more often than men. Someone other than a dermatologist advised a considerable number of acne treatments. In terms of the progress after previous treatment, we have interesting results in this study. The rate of aggravation after treatment was lower for dermatology clinics than beauty clinics, family medicine, oriental medicine, and internal medicine clinics. The total percentage of improvement and maintenance was highest in patients who sought a dermatologist. However, total percentages of improvement and stationary maintenance of beauty clinics, family medicine clinics, and oriental medicine clinics were comparable to that of dermatologic clinics. This

result reflects that, in Korea, a lot of dermatologic treatment and management is frequently performed by non-dermatologists. In Korea, steroids are sometimes prescribed by non-dermatologists for skin diseases. It is known that steroids reduce acne inflammation in the short term, but that this is likely to be followed by a rebound phenomenon and acneiform eruption, which ultimately aggravates acne. In addition, herbal medicine is popular in Korea and many people with a dermatologic problem, like acne, seek cure by traditional oriental medicine practitioners.

The total ratio of those who had received treatment versus those who had not was higher for women than for men. However, isotretinoin and triamcinolone intralesional injections were more commonly used by men, which is possibly because men tend to have more severe acne lesions, such as, acne cystica, acne conglobata or acne keloidalis that require more aggressive therapy (14).

In conclusion, the present study investigated the treatment-seeking behaviors of Korean acne patients. This is the first study conducted on the treatment-seeking behavior of Asian acne patients and on the factors that influence treatment choice. Furthermore, some of our results differed from those reported in the western countries.

ACKNOWLEDGMENTS

The authors express special thanks for the data collection from the following dermatologists: Weon Ju Lee, MD, PhD, Department of Dermatology, Kyungpook National University School of Medicine, Daegu, Korea; Kee Suck Suh, MD, PhD, Department of Dermatology, Kosin University Medical College, Busan; Mi Youn Park, MD, PhD, Department of Dermatology, National Medical Center, Seoul; Ki Ho Kim, MD, PhD, Department of Dermatology, Dong-A University Medical College, Busan; Moo Kyu Suh, MD, PhD, Department of Dermatology, College of Medicine, Dongguk University, Gyeongju; So Yun Cho, MD, PhD, Boramae Hospital, Seoul; Jee Ho Choi, MD, PhD, Department of Dermatology, University of Ulsan College of Medicine, Seoul; Seok Don Park, MD, PhD, Department of Dermatology, Wonkwang University School of Medicine, Iksan; Eung Ho Choi, MD, PhD, Department of Dermatology, Yonsei University, Wonju College of Medicine, Wonju; Seok Kweon Yun, MD, PhD, Department of Dermatology, Chonbuk National University Medical School, Jeonju; Seong Jun Seo, MD, PhD, Department of Dermatology, College of Medicine, Chung Ang University, Seoul. This study was one of the projects by the Korean Society for Acne Research that was

established in 2004.

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