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Filling in Pediatric Acne Practice Gaps: A Prospective Multicenter Study of Case-Based Education



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A B S T R A C T

Purpose: Studies have documented practice gaps in acne management between pediatricians and dermatologists. Evidence-based recommendations for acne management were published by the American Acne and Rosacea Society and the American Academy of Pediatrics in 2013. We assess the impact of a case-based learning intervention on pediatrician knowledge and treatment of acne in accordance with published recommendations.

Methods: Participants were recruited at four conferences for pediatric providers. Knowledge of the recommendations and confidence in utilizing them was assessed. Five case-based questions were presented, with providers choosing acne treatments before, immediately after, and 3 months after a case-based educational presentation. Answer selections consistent with the recommendations were scored as correct, and all responses were evaluated for patterns of medication selection.

Results: A total of 150 individuals participated, most with over 10 years experience. Knowledge of the recommendations and confidence in prescribing acne therapy was poor. The average pre-intervention management selections were 70% correct, increasing significantly to 86% 3 months after intervention ($p < .01$). The most significant improvements were demonstrated in provider's ability to choose regimens for moderate acne consistent with published recommendations, and in recommendation-consistent usage of retinoids and benzoyl peroxide ($p < .05$). Persisting practice gaps included a reluctance to use topical retinoids in preadolescents and lack of initiating oral combination therapies in patients with severe acne.

Conclusions: A case-based educational intervention significantly increased providers choosing acne treatments in accordance with evidence-based recommendations in an examination setting. Limitations of the study include an inability to assess actual provider prescribing behavior through this methodology.

IMPLICATIONS AND CONTRIBUTION

It is well known that substantial practice gaps exist in the treatment of pediatric acne. This study surveyed pediatric providers to determine the most significant gaps in current treatment, demonstrating how a case-based educational intervention can increase provider ability to treat acne in accordance with published recommendations.

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A practice gap is defined as “the gap between what the medical professional is doing or accomplishing in clinical practice (current reality) compared with what is or should be achieved in practice based on the best available evidence or professional knowledge” [1]. These gaps represent a significant challenge in pediatric acne management. For example, while topical retinoids are beneficial in the treatment of mild-to-moderate acne and are

important maintenance therapy for all types of acne, they are inconsistently prescribed, especially by nondermatologists [2]. In preadolescents, pediatricians are more likely to prescribe antibiotics, such as minocycline or oral clindamycin, than topical retinoids [3]. Other studies have shown frequent use of topical antibiotics without benzoyl peroxide among general practitioners [4]. Because children and teenagers with acne are at increased risk for depression and suicidal ideation, it is important that effective, evidence-based treatment be provided to prevent the development of these comorbidities [5].

In this study, we employed a case-based educational intervention targeting pediatric providers' knowledge of the current pediatric acne recommendations from the American Acne and Rosacea Society (AARS), endorsed by the American Academy of Pediatrics (AAP), and published in *Pediatrics* in May 2013 [6]. While the purpose of these recommendations was to better standardize acne management, it is not known whether pediatric providers are utilizing these recommendations or if they are even aware of them. Our intervention surveyed both baseline knowledge and knowledge after a 40-minute, case-based interactive learning session with follow-up 1 and 3 months after the initial intervention. We hypothesized that after the intervention, providers would demonstrate increased ability to choose treatments in accordance with the evidence-based recommendations. If successful, we hoped this intervention could become a model for the implementation of other pediatric guidelines in the future, helping to bridge practice gaps and create more standardization of patient care.

Methods

Subjects and setting

This study was approved by the Institutional Review Board of the University of California, San Diego. Participants were recruited at four different general educational events for pediatric providers across the country between January and October 2014. These events included a national annual conference in San Diego for pediatricians interested in increasing their knowledge of dermatology that included other lectures on current best practices and three regional pediatric dermatology seminars held in major city centers (San Francisco, Los Angeles, and New Jersey). The regional events were held at universities that invited both academic and community providers to attend. At these events, providers had the option of participating in the study and listening to a 40-minute case-based lecture on the AARS/AAP recommendations for the management of pediatric acne and the option of listening to the lecture without being in the study. The lecture consisted of a review of the AARS/AAP recommendations and practice applying these guidelines to a variety of different practice cases for mild, moderate, and severe acne. Individuals were eligible for the study if they were board-certified pediatricians, family practitioners, pediatric physician assistants, pediatric nurse practitioners, or Accreditation Council for Graduate Medical Education-certified pediatric residents. The lecture was also certified as one unit of Continuing Medical Education credit in some instances. No stipend was provided for participation.

Evaluation

Participants completed a baseline questionnaire (Q1) before the lecture ([Supplementary Data](#)). This questionnaire inquired

about the participants' demographics and their knowledge of and confidence in implementing the AARS/AAP pediatric acne recommendations in their practice. The questionnaire also contained five case-based multiple choice questions asking them to choose the "next best step" for treating a variety of pediatric patients with acne. The cases were designed by the pediatric dermatology team at Rady Children's Hospital, two members of whom also authored the AARS/AAP recommendations. Each case underwent a series of modifications to ensure that it was easy to understand and relevant. Immediately after the intervention, the questionnaire was readministered (Q2) to gauge immediate learning. Participants were then e-mailed the same questionnaires via SurveyMonkey (SurveyMonkey Inc., Palo Alto, California) 1 month (Q3) and 3 months (Q4) later to assess long-term retention.

Analysis

The analysis focuses on before and after changes between the preintervention questionnaire (Q1), the postintervention questionnaire (Q2), the 1-month postintervention questionnaire (Q3), and the 3-month postintervention questionnaire (Q4). Percentage of correct answer choices were evaluated, as well as percentage of providers utilizing an answer choice containing a retinoid. Retinoid usage was looked at specifically as this is a well-documented practice gap in acne management. Data from the questionnaires were entered into Microsoft Excel. Change in responses among variables of interest, from baseline to follow-up, was determined using the McNemar test for matched categorical variables, with a continuity correction. Comparisons between respondents and nonrespondents were calculated using a chi-square test. Comparisons between self-rated recommendation knowledge and confidence were calculated using a *t* test.

Results

Part I: Demographics

Of the 164 providers who viewed the educational unit, 150 participated in the educational intervention (91%). Most providers were pediatricians working in suburban settings ([Table 1](#)). Of the 150 providers who participated, 45 (30%) completed Q3 (1-month follow-up) and 62 (41%) completed Q4 (3-month follow-up). There was no statistically significant difference between the individuals who completed Q4 (respondents) and those who did not (nonrespondents) with respect to profession, gender, geographic location, or years in practice. There was a significant difference between respondents and nonrespondents at Q4 with respect to practice setting ([Table 1](#)).

Part II: Self-reported knowledge of and confidence in using the American Acne and Rosacea Society/American Academy of Pediatrics recommendations

[Table 2](#) illustrates participants' self-reported awareness of and confidence in using the AARS/AAP recommendations. Average preintervention knowledge of the recommendations was rated 2.4 (on a five-point Likert scale, where 1 is poor and 5 is excellent), and average preintervention confidence in using the recommendations was 2.5. Notably, before the intervention, 27% of individuals rated their knowledge of the AARS/AAP recommendations as "poor," and 26% rated their confidence in using the recommendations as "poor." Three months after the

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