



## Original Article

# Assessment of experience and training needs in adolescent medicine: Perspectives from pediatricians

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## ABSTRACT

**Objectives:** To promote adolescent health care in Taiwan, we conducted a national questionnaire-based survey to assess experience and training needs in adolescent medicine among pediatricians in Taiwan.

**Materials and Methods:** A 13-item questionnaire was mailed to all physicians registered in the Taiwan Pediatric Association. Perceived importance, necessity, skill, and training needs for main adolescent health issues were reported anonymously on a 5-point scale. We also analyzed their experience and competence in management of these adolescent health issues compared with management of two common pediatric diseases, respiratory tract infections and gastrointestinal disease. Data were analyzed using descriptive statistics, the  $\chi^2$  test, paired *t* test, Spearman correlation, and logistic regression analysis.

**Results:** A total of 226 questionnaires were included in the final analysis. Pediatricians' perceived competence in adolescent health problems was lower than that for common pediatric diseases. The analysis showed a positive correlation between competence and experience in medical practice. A higher likelihood of case referral was associated with lower perceived competence. Most respondents rated these adolescent issues "very important" or "important" (60–88%), whereas few of them reported being "very knowledgeable" or "knowledgeable" (11–36%). Nevertheless, most doctors were "very interested" or "interested" (44–71%) in receiving further training. Adolescent health issues related to "obesity, nutrition counseling, and eating disorders;" "growth and development during puberty and endocrine disorders;" and "mental health" were perceived to be of highest importance, whereas the medical topics "obesity, nutrition counseling, and eating disorders;" "dermatologic disorders;" and "growth and development during puberty and endocrine disorders" were considered top priorities for further training.

**Conclusion:** Taiwanese pediatricians, perceiving suboptimal experience and competence in managing many adolescent health problems, consistently expressed strong interest in receiving further adolescent medicine training. We identified and prioritized their training needs for a wide variety of adolescent health issues. These findings are expected to help guide the development of integrative educational programs for pediatricians in Taiwan.

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## 1. Introduction

Adolescence is a period of transition from childhood into adulthood. During this crucial time, people are likely to experience immense biophysical and psychosocial changes that affect their lifelong well being [1]. Over the past two decades, the major causes of adolescent morbidity and mortality worldwide and in Taiwan

have changed to include more psychosocial and environmental factors, such as mental disorders, unexpected injuries, unplanned pregnancy, sexually transmitted diseases, drug abuse, and smoking [2–4]. However, teenagers are often mistakenly thought to be healthier than they really are. Their health problems are hence overlooked by the current health care system. A gap exists between their experiences and expectations when consulting a doctor, such as in assurance of confidentiality and specific discussion of their issues of concern [5]. To eliminate the health inequalities among adolescents, the World Health Organization has strongly encouraged improvement and provision of youth-friendly services worldwide [6,7].

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Most adolescents seek medical attention for physical illness in pediatric clinics, so pediatricians are usually regarded as their caretakers from childhood to adolescence. However, pediatricians have reported limited competence in dealing with certain adolescent health issues. Increasing awareness of unmet training needs in adolescent medicine calls for the development of educational curricula for physicians [8–10]. Therefore, a number of training programs in adolescent medicine have been developed mainly in the United States, Canada, Australia, and several European countries [11,12]. Many pediatricians, family doctors, and internists have been trained as adolescent medicine specialists and provide a multidisciplinary network of care for teenagers in these countries. Corresponding to this trend, a committee of adolescent medicine was established by the Taiwan Pediatric Association and has served mainly to promote development of education in adolescent medicine.

Emphasis in this emerging field has recently been placed on provision of various adolescent health care services, both hospital-based and school-based, in Taiwan [13,14]. Physicians are required to update their knowledge and apply to care for adolescents in these medical practices. Despite the importance, formal curricula in adolescent health and medicine are still lacking in current pediatric residency training. In addition, the perspectives of pediatricians toward adolescent health have not yet been investigated. The aim of this study was to evaluate the perceived importance, necessity, knowledge, and training needs in adolescent health issues among pediatricians in Taiwan to integrate adolescent medicine into pediatric residency education, and improve adolescent health care. In addition, we also analyzed their clinical experience and competence in managing adolescent health problems compared with that for common pediatric diseases in this national survey.

## 2. Material and methods

A questionnaire was developed on the basis of suggested training curricula for adolescent medicine in the literature and its validity was reviewed by experts in this field [9,11,13,14]. It contained 13 main adolescent health issues, covering a wide range of topics from physical illness (nutrition and obesity, sports and musculoskeletal disorders, skin disorders, and endocrine disorders), reproductive health (pregnancy and sexuality), mental illness (psychiatric disorders and depression), behavioral problems (physical and sexual abuse, violence, risks and injuries, smoking, and substance use), to socioenvironmental aspects (family, ethics, and adolescent counseling). For every health issue, questions were formulated as follows: “Is this issue important to adolescent health?”, “Is it necessary to provide health services regarding this issue?”, “Do you know about this issue?”, and “Are you interested in receiving further education on this issue?” These questions represented respectively the importance, necessity, knowledge, and training needs in adolescent health issues. Perception of these factors was independently scored on a 5-point Likert scale. In terms of importance, for example, scores ranged from 1 (very unimportant) to 5 (very important).

In another part of this survey, experience and competence in managing these adolescent health issues were compared with that of common pediatric diseases, such as respiratory tract infections and gastrointestinal disease. “How often do you see adolescent patients with these health problems in clinics?” and “How do you rate your competence in managing these health problems?” were formulated in the questionnaire. There were five frequency options ranging from “never or rarely” to “always” and five competence options ranging from “incompetent” to “excellent.” Case referral was self-assessed dichotomously in the following question “Do you need referrals to specialists other than pediatricians in managing

**Table 1**  
Demographic characteristics of respondents (*n* = 226)

Demographic characteristics	<i>n</i> (%)
Gender	
Male	152 (67.3)
Female	70 (31.0)
Age (yr)	
<40	59 (26.1)
41–50	88 (38.9)
51–60	52 (23.0)
>61	25 (11.1)
Clinical site	
Medical center	26 (11.5)
Regional hospital	56 (24.8)
Local clinic	142 (62.8)
Practice period (yr)	
<10	45 (19.9)
11–15	52 (23.0)
16–20	46 (20.4)
21–25	35 (15.5)
>26	48 (21.2)
Geographical area	
North (Taipei, Keelung, Taoyuan, Miaoli, and Hsinchu)	92 (40.8)
Central (Taichung, Changhua, Nantou, and Yunlin)	60 (26.5)
South (Chiayi, Tainan, Kaohsiung, and Pingtung)	63 (27.9)
East/Offshore (Yilan, Hualien, Taitung, Penghu, Kinmen, and Lienchiang)	11 (4.8)

these health concerns?” The referral rate was accordingly represented by the percentage of positive responses.

We distributed the questionnaires to all registered members of the Taiwan Pediatric Association in the name of the Committee for Adolescent Medicine. Distribution was carried out by post followed by two rounds of reminder e-mails over a 2-week interval in January 2009. The two reminder e-mails were sent to all pediatricians regardless of their response status. The questionnaires were returned anonymously from January to February 2009. A survey containing inconsistent, out-of-range, or multiple answers to related questions was considered invalid.

Final entry of demographic data was summarized and compared with those of all registered pediatricians using the  $\chi^2$  test. In addition, levels of perceived experience and competence in managing adolescent health issues were compared with that of common pediatric diseases with the paired *t* test. Spearman correlation analysis was used to examine the relationship between perceived experience and competence. Two logistic regression models were also applied to assess independent association between certain demographic factors, perceived competence, and case referral status. We used multilevel ordinal logistic regression to determine the predictive factors of perceived competence. The independent variables included gender, age, type of clinical site (medical center, regional hospital, local clinic), and geographic area in this analysis. Moreover, binary logistic regression was carried out using case referral status as the dependent variable. Perceived competence was added as an independent variable in the latter analysis model. The statistical analysis was conducted with SPSS 17.0 (SPSS Inc., Chicago, IL, USA).

## 3. Results

A total of 247 questionnaires were completed, representing a response rate of 6.4% among 3836 members. After data verification, 226 completed questionnaires were included for final analysis.

Of the respondents, 67.3% were men, 31% were women, and 1.7% did not give their gender. In terms of clinical practice, 62.8% of respondents worked as general pediatricians in private clinics and

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