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Adolescent Medicine: Attitudes, Training And Experience of Pediatric, Family Medicine and Obstetric-Gynecology Residents

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ADOLESCENT MEDICINE: ATTITUDES, TRAINING AND EXPERIENCE OF PEDIATRIC, FAMILY MEDICINE AND OBSTETRIC-GYNECOLOGY RESIDENTS

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ADOLESCENT MEDICINE: ATTITUDES, TRAINING AND EXPERIENCE OF PEDIATRIC, FAMILY MEDICINE AND OBSTETRIC-GYNECOLOGY RESIDENTS.

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Several studies have documented a deficiency in the delivery of preventive services to adolescents during physician visits in the United States. In many instances, a correlation has been noted between insufficient training and provision of adolescent medicine services in the practicing physician population. The American Medical Association, American Academy of Pediatrics, American Academy of Family Physicians, American College of Obstetrics and Gynecology and Society for Adolescent Medicine recommend adolescent providers deliver comprehensive health services to teenagers. This study sought to assess and compare Pediatric, Family Medicine and Obstetric-Gynecology resident perceptions of their responsibility, training, experience and comfort with providing comprehensive health care services adolescents. We asked residents to identify the following: (1) adolescent health services they considered part of their scope of practice in their respective field; (2) the level of training they had received with regard to select adolescent health services; (3) the experience they had performing select clinical activities with adolescents; and (4) their comfort with aspects of adolescent care. We further asked two questions to test resident knowledge of an adolescent's right to consent to contraception or an abortion without parental notification in the state of their residency. A total of 87 residents (31 Obstetric-Gynecology, 29 Family Medicine and 27 Pediatric) were surveyed. Most residents from all three fields felt the full range of adolescent preventive and clinical services represented in the survey fell under the scope of their practice. Most residents also reported high levels of comfort with examined aspects of adolescent care. In regard to some activities, the positive scope and comfort responses were matched by high reported levels of training and experience, including defining confidentiality; counseling about eating, exercise and obesity; counseling about substance abuse; and discussing STDs, sexual partners and contraception. However, for multiple key adolescent services, considerable discrepancies existed between reported levels of training and experience and the positive responses concerning scope and comfort. In particular the results of study suggested all residents need considerably more training and experience with mental health issues, referring teenagers for substance abuse treatment, and addressing physical and sexual abuse. Overall, there were also significant differences between fields. Family Medicine residents reported the greatest potential for providing comprehensive health care. However, they suffered from the overall deficiencies in training and experience noted above. Obstetric-Gynecology residents reported deficiencies in the provision of several preventive counseling and general health services. Pediatric residents reported multiple deficiencies in the provision of sexual health services. Our results indicate, at this time and in the near future, it is unlikely that adolescents will be able to obtain the full range of recommended preventive and clinical services in a single physician visit unless residencies programs actively incorporate increased training in the full range of adolescent preventive and clinical health services.

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Introduction

The solution of adult problems tomorrow depends in large measure upon the way our children grow up today. There is no greater insight into the future than recognizing that, when we save children, we save ourselves.

Margaret Mead [1]

Adolescence is a time when young people explore different behaviors and frequently develop habits that they carry with them into adulthood. Teens engage in numerous positive activities such as playing sports, participating in school activities, forming supportive friendships and providing assistance and love to their families. However, adolescents also frequently engage in risk-taking and unhealthy behaviors that place them at present and future risk for poor health outcomes.

The majority of morbidity and mortality that adolescents in the United States experience can be attributed to preventable causes. These causes include substance abuse, sexually transmitted diseases, unintended pregnancy, depression, and intentional and unintentional injuries [2,3]. Moreover, main causes of morbidity and mortality in adults such as cancer and cardiovascular disease can be linked to behaviors established during childhood and adolescence including unhealthy food choices, limited physical activity, unsafe sex, tobacco use, and alcohol and drug abuse.

According to data from the National Health Interview Survey in 2005, approximately 85% percent of adolescents visited a health provider at least once during the year [4]. These visits provide physicians with a unique opportunity to assist adolescents in choosing life behaviors that can improve their present and future health. Recent studies have demonstrated that many adolescents are interested in discussing health risks with their provider, especially if they are given private time and assured of confidentiality [5-9]. Out of 4060 teenagers enrolled in managed care organizations, 67%

found counseling by physicians helpful regarding smoking, alcohol, condoms, STDs and birth control [5]. In addition, studies have shown that physicians can change adolescent behavior through the delivery of preventive services [9-12].

Recognizing the importance of delivering preventive services to teens, the Adolescent Health Department of the American Medical Association (AMA) published and publicized Guidelines for Adolescent Preventive Services (GAPS) in 1994 [13]. GAPS sought to address noted deficiencies in the provision of adolescent health care by directing primary care physicians to deliver comprehensive rather than categorical health services to teens. GAPS recommended annual teen health visits that included comprehensive preventive interventions targeting main social morbidities including healthy eating, physical activity, obesity and eating disorders; tobacco, alcohol and drug use; depression and suicide; healthy sexual behaviors; safety and unintentional injuries; and physical, sexual and emotional abuse.

Following the dissemination of GAPS, several medical professional societies and governmental organizations voiced their support. The National Committee for Quality Assurance added a yearly visit for teens to its measurement battery [14]. Published adolescent care guidelines from the Maternal and Child Health Bureau, the American Academy of Pediatrics (AAP), the American Academy of Family Physicians (AAFP), and the American College of Obstetrics and Gynecology (ACOG) currently all support comprehensive preventive services for teens similar to those presented in GAPS [5,7,14-18].

ACOG, in particular, has recently endorsed an increased focus on adolescent health care. This past May (2006) during the ACOG Annual Meeting, the Committee on

Adolescent Health recommended girls make an initial reproductive health visit to an obstetrician-gynecologist at age 13 to 15 in order to provide preventive health care services and to facilitate the development of a physician-patient relationship [19]. The Committee Opinion paper introducing the concept of an initial reproductive visit suggests that a wide-range of preventative topics be addressed during the visit including: adolescent development, normal menses, sexual orientation, healthy eating habits, injury prevention, date rape prevention, pregnancy and STD prevention, tobacco, alcohol and substance use, mental health issues, physical, sexual and emotional abuse; blood pressure problems, and immunization status.

The importance of providing comprehensive rather than categorical care is especially important given teen patterns of accessing health care. Adolescents visit health providers with less frequency compared to all other age groups. When teens do visit a health provider, 93% have one usual place of care, most often a particular doctor's office (78%) or a clinic (20%) [20]. Since the average adolescent is more likely to visit a single type of health provider rather than a variety of health providers representing different specialties, it is particularly important for adolescent health professionals to provide comprehensive care for teens regardless of their specialty.

Unfortunately, despite the widespread acceptance of GAPS and increased emphasis on providing preventive and clinical services to teens among medical professional societies, multiple studies have continued to document a deficiency in the delivery of key preventive and clinical services to adolescents. Only 39% of adolescents received any type of preventive counseling during ambulatory visits as documented by the National Ambulatory Medical Care Survey (NAMCS) and National Hospital

Ambulatory Medical Care Survey (NHAMCS) in 1997-2000. This number is lower than that observed in 1993-1996, when 47% of adolescents received preventive counseling [16]. Similarly, in the 1997 Commonwealth Fund Survey of the Health of Adolescent Girls, 71% of teens reported at least one potential health risk, yet only 37% of these teens reported discussing any of these risks with their provider [21].

The number of overweight and obese U.S. teenagers documented by the National Health and Nutrition Examination Survey (NHANES) has steadily increased over the past four decades, from 5% in 1970 to 14% in 1999 and then 17% in 2003. An additional 34% of teens were at risk for overweight in 2003 [20]. Overweight adolescents are more likely to develop chronic conditions such as hypertension, glucose intolerance and diabetes. Despite increased awareness of the obesity epidemic among medical professionals, only 40% of overweight children for ages 12-15 years, and 52% for ages 16-19 years had been told by a doctor or other health-care professional that they were overweight in the 1999-2002 NHANES [22]. Physicians were most likely to provide preventive counseling about diet and physical activity in the NAMCS and NHAMCS yet nonetheless provided such counseling to only one-quarter of adolescents [16].

Suicide and depression cause significant morbidity and mortality among U.S. teens. Suicide is the third leading cause of death for adolescents 15 to 19 years old [23]. The self-reported rate of attempted suicide among U.S. adolescents has remained constant at around 8.5% over the past 15 years. In 2005, almost 30% of teenagers reported feeling sufficiently sad or upset for 2 or more weeks that they stopped doing some of their usual activities [2]. Despite recommendations for a minimum of annual screening for suicide and depression, only 23% of teens in the Young Adult Health Care

Survey (YACHS) reported preventive screening and counseling on emotional health [5]. In a survey of pediatricians and family physicians practicing in Maryland in 1995, 47% of physicians reported that 1 or more adolescent patients attempted suicide in the previous year, but only 23% either frequently or always screened adolescent patients for suicide risk factors [24].

Substance abuse likewise remains a serious problem among U.S. adolescents [2, 25]. Half of all high school students have tried cigarettes and nearly one quarter of all 12th graders are current smokers. Three-quarters of all secondary students have had a drink containing alcohol, 43% are current drinkers and 26% have drunk 5 or more alcoholic beverages in a row. By the time they graduate high school, half of U.S. students have tried an illicit drug. In addition to the morbidity and mortality stemming directly from substance abuse, teens who use substances are at increased risk for unintentional injuries, violence, and unsafe sexual practices. However, as noted with obesity, depression and suicide, U.S. physicians do not appear to adequately screen for substance use among teenagers. Eleven percent of teenagers in the 1997-2000 NAMCS and NHAMCS were screened for tobacco use [16]. Of 1842 primary care physicians from the AMA masterfile, 23-43% of pediatricians and 14-27% of family physicians self-reported that they screen for alcohol use among teenage patients [26]. Only 37% of teens in the 1997 Commonwealth Fund Survey of the Health of Adolescent Girls who reported drug use within the past month received screening and counseling for drug use from their physician [7].

Since 1991 the teen birth rate has been decreasing in the U.S. However, this decrease is less than that seen among adolescents in other developed countries.

Adolescents in the United States have the highest rate of pregnancy, births, abortions and STDs among industrialized nations despite similar rates of sexual activity [27]. This difference has been attributed to a variety of factors including less frequent use of and less access to contraception, socioeconomic and cultural differences, and differences in the delivery of preventive services to teens.

Around half of all U.S. teens have had sexual intercourse before they finish high school [2]. While sexual activity increases by grade in U.S high schools, condom use decreases [28]. U.S. teenagers are at particularly high risk for contracting a sexually transmitted disease (STD). One in four sexually active teens acquire an STD. Half of all new STDs in the U.S. including half of all new HIV infections occur in young people under the age of 24 [29]. Moreover, while teenage pregnancy has decreased, the number of adolescent girls affected remains significant. Approximately 900,000 American teens between the ages of 15 and 19 becomes pregnant every year. More than 4 out of every 10 young women in the U.S. become pregnant before she reaches 20 years of age. Sixty percent of these pregnancies occur within the first 6 months of initiation of sexual activity [30].

Given the significant number of teens affected by STDs and unintended pregnancies, it is not surprising that a nationally representative survey in 2003 of 1800 adolescents revealed teenagers are more concerned about sex and sexual health than any other health issue. More than 75% of those surveyed wanted more information about sexual health topics. In particular, many teens reported misperceptions concerning STD risks, correct condom use and condom effectiveness [31].

In contrast, the documented rates of physician screening or counseling teenagers on sexual health topics are low. Only 8.0% of teens received risk reduction counseling on family planning and 5.1% on HIV/STD transmission in the 1997-2000 NAMCS and NHAMCS [16]. A chart review of 1112 Medicaid adolescents ages 14-18 in King County, WA, demonstrated a contraceptive counseling rate at well-child visits of 5% for boys and 33% for girls; 7% of boys and 18% of girls received condom counseling [21]. Physicians faired a bit better in a survey of secondary students in California from 1995-1996. Out of a sample of 1989 teens, 49% reported discussing at least one sexual health topic with their provider, 39% discussed HIV prevention and 37% discussed condom use [21]. Nonetheless, these percentages are still far below recommended screening and counseling on sexual health. Under-screening of sexually active adolescents for STDs has also been reported in several studies [32-35]. A recent investigation of primary care providers at a single health facility found only 42% of providers provided annual Chlamydia screening of sexually active adolescents. Completion of Chlamydia screening was significantly correlated with providers' perceived knowledge, confidence, comfort, and perceived patient comfort [33].

Several other studies have demonstrated a relationship between physician training in adolescent health care and the delivery of these services to teenagers [14, 36-40]. In addition, training interventions for primary care physicians have improved the delivery of preventive and clinical services to teens [41-44]. Noting the connection between insufficient training and provision of adolescent medicine services seen in the practicing physician population, medical professional societies have recommended increased adolescent medicine training in primary care residencies. The Pediatric Residency

Review Committee established a guideline requiring pediatric residencies to incorporate a 1-month rotation in adolescent medicine by 1997 in an attempt to correct noted deficiencies in the provision of health and preventive services to teens. A follow up survey of residency programs in 1998 following implementation of this guideline found that most pediatric residency programs provided adolescent medicine rotations, though the majority did not adequately address the full range of topics [45]. More recently, in 2001, the American Medical Association Residency Training in Adolescent Preventive Services Project working group outlined a series of goals for training pediatric and family medicine residents in the delivery of adolescent health care [46]. These goals reinforce key GAPS recommendations and the need for adolescent providers to deliver comprehensive preventive and clinical services to teens. Along similar lines, the Resident Review Committee of the American College of Obstetricians and Gynecologists (ACOG) requires obstetric-gynecology resident programs to provide training in comprehensive preventive care including health promotion counseling, nutrition counseling, tobacco-drug counseling, family planning, and preventive care specifically indicated for adolescents [47].

There is insufficient data to evaluate whether the increased emphasis on adolescent health care has altered resident attitudes, knowledge, comfort and effectiveness administering health care to adolescents. Overall, assessments of resident skill and confidence in administering care to adolescents in the United States have been sparse. In addition, such assessments have only examined residents from 1 to 2 programs. Prior to the release of GAPS, in 1987, residents in 6 residency programs (family practice, internal medicine, pediatrics, emergency medicine, obstetrics-gynecology and combined

medicine-pediatrics) at the Indiana University School of Medicine completed a survey regarding their perception of their skill level in the clinical care of adolescents. The majority of the 53 residents who responded generally considered themselves unskilled to manage adolescents in the areas of sexuality, family planning, handicapping conditions, and psychosocial problems [48]. In 1991, a more comprehensive survey examining resident attitudes, knowledge and training in adolescent health was administered to residents from 6 specialties at East Carolina University School of Medicine including Family Medicine (n=32), Internal Medicine (n=32), Pediatrics (n=16), Obstetrics-Gynecology (n=14), Med-Peds (n=6) and Psychiatry (n=19) [49]. The study found the average resident encountered less than 10 adolescents during their residency training. Around 50% of residents in all specialties reported they needed more training in eating disorders, nutrition/weight control, abortion, sexual orientation, alcohol/substance abuse, and suicide/depression. In addition, about 30% felt they needed more training in family planning and STDs.

Since the dissemination of GAPS, there have been no assessments of resident skills or attitudes regarding the delivery of comprehensive preventive and clinical services to teens. A survey focused specifically on assessing the delivery of sexuality-related care to adolescents was administered to pediatric residents (n=57) at Johns Hopkins during the early 1990s. The survey revealed most residents had counseled adolescents with regard to STDs but found self-reported deficiencies in counseling teenagers regarding condom use and in taking a history of sexual preference [50].

While focused on adult primary care rather than adolescents, a national survey of final-year primary care residents in internal medicine, family medicine and obstetrics-

gynecology representing 162 programs assessed perceived preparedness to provide preventive counseling. In general, residents felt better prepared to counsel on smoking (62%) and diet/exercise (53%) than depression (37%), substance abuse (36%) or domestic violence (21%). Significant differences in perceived preparedness existed between specialties. OB-GYN residents were more confident about domestic violence counseling compared to FM residents, while FM residents felt most prepared to counsel with regards to smoking, diet/exercise and depression [51]. In 1995, a nationwide survey of self-reported primary care practice among 4099 OB-GYN residents demonstrated that OB-GYN residents provided preventive counseling to more than 50% of patients in regard to smoking, alcohol/drug use, STDs, and family planning. However, they provided preventive counseling for less than 50% of patients in regard to exercise, diet/nutrition, injury prevention, emotional/behavioral functioning, and abuse [52].

The primary aim of this study was to assess and compare Pediatric, Family Medicine and Obstetric-Gynecology resident perceptions of their responsibility, training, experience and comfort with providing preventive services and health care to adolescents. We asked residents to identify the following: (1) adolescent health services they considered part of their scope of practice in their respective field; (2) the level of training they had received with regard to select adolescent health services; (3) the experience they had performing select clinical activities with adolescents; and (4) their comfort with aspects of adolescent care. We further asked two questions to test resident knowledge of an adolescent's right to consent to contraception or an abortion without parental notification in the state of their residency.

Methods

Sample

We conducted a cross-sectional study with convenience sampling of all residents present during resident educational sessions on a given day at participating residency programs between February 19 and March 16, 2007. Residency program directors of all obstetric-gynecology, family medicine and pediatric residency programs in the state of Connecticut were contacted to request participation of their residents in the study. An additional family medicine program in the state of New York was contacted in order in increase the sample size for family medicine. Family medicine, pediatrics and obstetrics-gynecology were chosen since these specialties see the greatest number of adolescent patients in the U.S. [8,15,16,48,53]. While OB-GYN physicians see fewer adolescents than either pediatricians or family physicians, they tend to be the third most common specialty accessed by teens. Given the recent call to increase the role of OB-GYN physicians in providing comprehensive medical care to teens via the initiation of initial reproductive health visits; we felt it was important to include the specialty in the study.

A time was scheduled during regular resident education sessions to administer the survey to residents in the programs who agreed to participate. Participating programs included the University of Connecticut Family Medicine Program, Montefiore/ Einstein University Family Medicine Program, University of Connecticut Pediatrics Program, Yale-New Haven Hospital Pediatric Residency Program, Danbury Hospital Obstetrics and Gynecology Program, Bridgeport Hospital Obstetrics and Gynecology Residency Program, Stamford Hospital/Columbia University College of Physicians and Surgeons Obstetrics and Gynecology Program, andYale-New Haven Hospital Obstetrics and

Gynecology Residency Program. The author administered the survey in the form of a written questionnaire to all residents present at the educational session on the given day. Residents who consented to participate filled out the survey in the educational conference room during a pre-scheduled time between educational sessions. Residents who did not wish to participate did not fill out a survey. The survey took approximately 5 minutes and consisted of 62 closed ended questions (see Appendix 1). The questionnaire was designed to obtain information about the subjects' conception of the scope of their practice with regard to adolescent medicine, the training in adolescent medicine they have received in residency, their experiences and comfort providing care to adolescents during residency, and their knowledge of adolescent rights to consent to contraception and abortion without parental notification in the state of their residency. The questions are not based on any prior survey instrument, as a validated instrument addressing the range and specific focus of these questions does not exist.

Demographics including level of training, gender, and intention to specialize post-residency were obtained to investigate these characteristics as potential confounders of survey responses. We imagined level of training would particularly influence resident training and experience. Physician gender has been noted to influence the delivery of preventive services to patients in several studies, with females seeming considerably more likely to provide preventive counseling than males [7,38,40,54-56]. Intention to specialize has been shown to effect survey responses regarding preventive service provision among internal medicine residents [57], and thus we wanted to investigate whether it might influence survey responses in our study. We further asked whether the residency program had a required adolescent medicine rotation and if so, whether the

resident had completed the rotation prior to survey administration. We suspected that existence of a required adolescent rotation and the completion of such a rotation might impact survey responses. Residents were placed into field (obstetric-gynecology, family medicine or pediatrics) and program affiliation categories based on the type of residency program. Program affiliation was defined as “religious” if the residency program was affiliated with a religious hospital or “non-religious” if the residency program was not affiliated with a religious hospital.. The possibility of program affiliation as a potential confounder could therefore be investigated. With the exception of 3 obstetric-gynecology residents, all residents in the sample represent academic residency programs. Therefore, a distinction between community and academic residency programs was not pursued.

The Yale-New Haven Hospital and Yale School of Medicine Investigational Review Board approved this protocol. The student author designed the study and questionnaire, and administered all surveys herself.

Study Variables

Survey questions were chosen to cover 5 main question categories including scope, training, experience, comfort and knowledge. These categories are explained in greater detail below. Questions within each category cover 5 main topics in adolescent medicine including general adolescent health, mental health, substance abuse, physical and sexual abuse and sexual health. These topics were chosen since they have been consistently identified as key issues in adolescent health by the American Medical Association (AMA), the American Academy of Pediatrics, the American Academy of

Family Physicians, the American College of Obstetricians and Gynecologists and the Society for Adolescent Medicine [5,7,13-19]. A greater number of sexual health questions were included in each category in deference to the recent national survey of adolescents completed by the Kaiser Family Foundation that demonstrated adolescents are more concerned about sexual health than any other health topic [31]. In addition, several studies of practicing physicians have demonstrated specialty-specific differences in particularly in the provision of care related to sexual health [39,40,55,58].

Scope

These questions were designed to investigate which clinical activities residents of different fields envision as part of their responsibilities in providing health care to adolescent patients. Residents were asked to indicate, “Yes” or “No” as to whether they considered specific clinical activities with adolescent patients part of the scope of the practice in their field.

Training

Residents were asked to indicate the level of training they had received in their residency program in regard to a series of clinical activities with adolescent patients. Residents chose between 1 (No training), 2 (Minimal training), 3 (Adequate training) and 4 (Excellent training). Categories 1 and 2 were grouped into a new category “Inadequate” and categories 3 and 4 were grouped into a new category “Adequate” for statistical analysis.

Experience

With the exception of two experience questions, residents were asked to indicate, “Yes” or “No” as to whether they had at least one encounter of a given type of clinical

care with an adolescent patient during their residency program. For the two last experience questions, residents were asked to select between 5 categories (0, 1-10, 11-20, 21-50 and > 50) to indicate the number of times they had experienced each activity during residency.

Comfort

Residents were asked to indicate their level of comfort providing specific aspects of health care to adolescent patients. Each question began with the phrase “I am comfortable...”. The resident was asked to respond to the statement by selecting “Strongly Agree”, “Agree”, “Disagree” or “Strongly Disagree”. For statistical analysis, “Strongly Agree” and “Agree” were grouped into one category, “Agree”; likewise, “Disagree” and “Strongly Disagree” were grouped into one category, “Disagree”.

Knowledge

Given the need to keep the survey to a reasonable length, only two knowledge questions were asked pertaining to an adolescent’s right to consent to contraception or an abortion without parental notification. Each question was presented as a statement. Residents were asked to indicate whether the statement was “True” or “False” or mark “I Don’t Know” to indicate they did not know the answer.

Statistical Analysis

Data analysis was done using SAS 9.1 (SAS Institute Inc., Cary NC) statistical analysis software package. Resident responses to each survey question were the primary outcome variables. The primary exposure variable was specialty. Chi-squared tests or Fischer's exact test were used to examine the relationship between resident specialty and survey responses for each item on the questionnaire. Potential confounders (sex, program affiliation, plans to specialize, and level of training) were investigated using chi-squared tests or Fischer's exact test to examine the relationship between the potential confounder and specialty as well as the potential confounder and the response to each question. If this methodology suggested a variable had the potential to confound the result, a stratified analysis of the variable in question for each category of the primary exposure was performed. In examining Program Affiliation, stratified analysis was not possible given the absence of OB-GYN residents in programs with a religious hospital affiliation. Thus, the relationship between Program Affiliation and survey responses was explored by using chi-squared tests or Fischer's exact test to analyze a data set that excluded residents in programs with a religious affiliation. Given the small sample size of the data set, we used a p value of equal or less than 0.1 to determine significance for all of our analyses.

Results

During the study period, 88 subjects were approached during their resident education sessions. One subject refused participation. A total of 87 subjects completed the study, yielding a participation rate of 99%. Of residents in the study, 36% were from an obstetric-gynecology program, 33% from a family medicine program and 31% from a pediatrics program. Table 1 displays demographic data by field using chi-square analysis. Across all three fields, 31% were interns, 31% were 2nd year residents and 38% were 3rd or 4th year residents. The number of residents in each level was approximately even between the three different fields. A greater number of females (63%) are represented compared to males (37%). A significantly [p=0.037] greater percentage of obstetric-gynecology residents (80%) were female compared to the number of female residents surveyed in family medicine (48%) and pediatrics (58%). Greater than half of the residents (58%) planned to practice as general physicians, and 42% planned to specialize. Intention to specialize by field was statistically significant with the majority of obstetric-gynecology and pediatric residents planning to specialize compared to the majority of family medicine residents who planned to practice as generalists [p=0.002]. Approximately, 55% of residents were from programs affiliated with non-religious hospitals; 32% were from programs with religious hospital affiliations. No obstetric-gynecology residents were from programs with religious hospital affiliations.

Analysis results for all residents by field are presented by category below and in Tables 2-6. Survey items for which differences by field are altered by excluding intern level residents from the analysis are presented in each section as appropriate and in Table 7.

Table 1 - Characteristics of Residents Surveyed

		All (n = 87)	OBG (n = 31)	FM (n = 29)	Peds (n = 27)	p value
Resident Characteristics		n (%)	n (%)	n (%)	n (%)	
Level of training		87(100)				0.580
	Intern	27 (31.0)	9 (29.0)	10 (34.5)	8 (29.6)	
	2nd Year Resident	27 (31.0)	10 (32.3)	11 (37.9)	6 (22.2)	
	3rd or 4th Year Resident	33 (37.9)	12 (38.7)	8 (27.6)	13 (48.2)	
Sex		83 (100)				**0.037**
	Female	52 (62.7)	24 (80.0)	14 (48.3)	14 (58.3)	
	Male	31 (37.2)	6 (20.0)	15 (51.7)	10 (41.7)	
Intention to Specialize		79 (100)				**0.002**
	Generalist	46 (58.2)	13 (48.2)	23 (85.2)	10 (40.0)	
	Specialist	33 (41.8)	14 (51.9)	4 (14.8)	15 (60.0)	
Program Affiliation		87 (100)				**< 0.001**
	Non-Religious Hospital	55 (63.2)	31 (100)	14 (48.3)	10 (37.0)	
	Religious Hospital	32 (36.8)	0 (0)	15 (51.7)	17 (63.0)	

Scope

Overall, residents from different fields were largely in agreement about what services they considered to be part of their scope of practice (Table 2). The only practices that more than 10% of residents felt did not fall under their responsibilities as practitioners were prescribing emergency contraception to teens (88%) and referring adolescents to clinics where they could receive an abortion (86%). These two practices, along with counseling about pregnancy termination options were the only practices that varied significantly between different fields. OB-GYN residents (97%) were the most likely to consider prescribing emergency contraception as part of their scope of practice and pediatric residents (78%) least likely with FM residents (89%) falling in the middle. OB-GYN (100%) and FM (97%) residents most often considered counseling about pregnancy termination options their responsibility while pediatric residents (85%) were less likely to consider such counseling their responsibility. In regard to instructing teens where to go to get an abortion, OB-GYN resident unanimously felt it fell under their scope while FM

(79%) and pediatric (77%) residents were less likely to feel it was part of their responsibility.

Table 2 - Resident perceptions of the scope of their practice. Percentages reflect the percent of residents within a given field that answered "yes" compared to residents in that same field that answered "no".

Topic	Scope of Practice*	All (n = 87)	OBG (n = 31)	FM (n = 29)	Peds (n = 27)	p value
Activity with Adolescent Patients		**n (%)**	n (%)	n (%)	n (%)	
General						
Define confidentiality	Yes	87 (100)	31 (100)	29 (100)	27 (100)	‡
Counsel about eating habits & physical activity	Yes	86 (98.9)	30 (96.8)	29 (100)	27 (100)	0.356
Psychiatric						
Identify depression and suicidal ideation	Yes	84 (96.6)	28 (90.3)	29 (100)	27 (100)	0.105
Substance Abuse						
Counsel about tobacco, alcohol and drug use	Yes	87 (100)	31 (100)	29 (100)	27 (100)	‡
Refer to substance abuse treatment programs	Yes	85 (97.7)	30 (96.8)	29 (100)	26 (96.3)	0.224
Sexual Health						
Discuss number and gender of sexual partners	Yes	87 (100)	31 (100)	29 (100)	27 (100)	‡
Conduct pelvic exams with sample collection	Yes	84 (93.1)	30 (96.8)	28 (96.6)	23 (85.2)	0.239
Counsel about STD-prevention	Yes	87 (100)	31 (100)	29 (100)	27 (100)	‡
Teach correct condom use	Yes	82 (94.3)	28 (90.3)	28 (96.6)	26 (96.3)	0.614
Counsel about pregnancy prevention	Yes	87 (100)	31 (100)	29 (100)	27 (100)	‡
Prescribe contraception	Yes	85 (98.8)	31 (100)	29 (100)	25 (96.2)	0.302
Prescribe Emergency Contraception	Yes	76 (88.4)	30 (96.8)	25 (89.3)	21 (77.8)	**0.081**
Counsel about pregnancy termination options	Yes	81 (94.2)	31 (100)	28 (96.6)	22 (84.6)	**0.023**
Instruct where to go to obtain an abortion	Yes	74 (86.1)	31(100)	23 (79.3)	20 (76.9)	**0.006**

* "Yes" indicates resident believes activity is part of the scope of practice her field.
‡ P value not calculated.

Training

Overall, counseling about STD risk and prevention (92%) was the only service for which greater than 90% of residents felt they had received adequate training (Table 3). Between 80-90% of residents felt adequately trained in defining confidentiality, counseling about substance abuse, discussing sexual partners, conducting pelvic exams, and counseling about and prescribing contraception. Between 70-80% of residents

reported adequate training in counseling about diet/exercise, screening for depression/suicide, screening for physical abuse, and counseling about emergency contraception. Residents reported the least training in counseling about eating disorders/body image, screening for sexual abuse, teaching correct condom use, prescribing emergency contraception and counseling about pregnancy termination options. Education regarding how to teach correct condom use was particularly low with 47% of residents reporting no or minimal training.

Several significant differences exist between fields in regard their reported level of training (Table 3). OB-GYN residents reported significantly less training than FM or pediatric residents in defining confidentiality and several preventive services focusing on counseling and screening including counseling about diet/exercise, counseling about eating disorders/body image, screening for depression/suicide, screening/counseling about substance abuse, and discussing sexual partners. Pediatric residents, on the other hand, reported significantly less training than OB-GYN or FM residents in several services pertaining to sexual health including conducting pelvic exams; counseling and prescribing contraception; counseling and prescribing emergency contraception; and counseling about pregnancy termination. When interns are excluded from the analysis (Table 7), the difference in the training reported by pediatric residents in regard to pelvic exams and counseling and prescribing contraception disappears.

Table 3 - Resident perceptions of their training in adolescent medicine. Percentages reflect the percent of residents within a given field that answered adequate or excellent training (Adequate) with the remainder (not shown) answering either no or minimal training (Minimal)

Topic Activity with Adolescent Patients	**Training**	**All (n = 87)** n (%)	**OBG (n = 31)** n (%)	**FM (n = 29)** n (%)	**Peds (n = 27)** n (%)	**p value**
General						
Define confidentiality	Adequate *	71 (81.6)	20 (64.5)	26 (89.7)	25 (92.6)	**0.009**
Counsel about eating habits & physical activity	Adequate	65 (74.7)	13 (41.9)	26 (89.6)	26 (96.3)	**< 0.001**
Psychiatric						
Counsel about eating disorders and body image	Adequate	53 (60.9)	12 (38.7)	23 (79.3)	18 (66.7)	**0.004**
Screen for depression and suicidal ideation	Adequate	65 (74.7)	16 (51.6)	27 (93.1)	5 (81.5)	**0.001**
Substance Abuse						
Screen & counsel for tobacco, alcohol and drug use	Adequate	73 (83.9)	22 (71.0)	28 (96.6)	23 (85.2)	**0.022**
Abuse						
Screen for physical abuse	Adequate	61 (70.1)	18 (58.1)	23 (79.3)	20 (74.1)	0.172
Screen for sexual abuse	Adequate	58 (66.7)	18 (58.1)	21 (72.4)	19 (70.4)	0.443
Sexual Health						
Discuss number and gender of sexual partners	Adequate	70 (80.5)	21 (67.7)	27 (93.1)	22 (81.5)	**0.046**
Conduct pelvic exams with sample collection	Adequate	73 (83.9)	26 (83.9)	29 (100)	18 (66.7)	**0.001**
Counsel about STD-prevention	Adequate	80 (92.0)	27 (87.1)	28 (96.6)	25 (92.6)	0.437
Teach correct condom use	Adequate	46 (52.9)	17 (54.8)	17 (58.6)	12 (44.4)	0.548
Counsel about contraception	Adequate	71 (81.6)	25 (80.7)	27 (93.1)	19 (70.4)	**0.089**
Prescribe contraception	Adequate	71 (81.6)	26 (83.9)	28 (96.6)	17 (63.0)	**0.005**
Counsel about Emergency Contraception	Adequate	62 (71.3)	24 (77.4)	26 (89.7)	12 (44.4)	**0.001**
Prescribe Emergency Contraception	Adequate	60 (69.0)	24 (77.4)	25 (86.2)	11 (40.7)	**0.001**
Counsel about pregnancy termination options	Adequate	58 (66.7)	25 (80.7)	23 (79.3)	10 (37.0)	**< 0.001**

***** "Adequate" is defined as those residents who indicated they received adequate or excellent training compared to "Minimal" which reflects those residents that indicated they received no or minimal training.

Experience

Overall, approximately 90% of residents have defined confidentiality; counseled about tobacco cessation, alcohol use and drug use; discussed sexual partners; counseled about STD risk and prevention; and counseled about contraceptive options at least once

with an adolescent patient (Table 4). Many residents have also evaluated positive aspects of an adolescent's life (85%) and counseled an obese teen about weight loss (82%). Fewer residents (70%) have counseled a teenager with depression. Residents report considerably less experience with counseling teens with an eating disorder (44%); counseling a suicidal adolescent (43%); referring teens to substance abuse treatment programs (26%); counseling teens that have experienced either physical (31%) or sexual (42%) abuse; teaching correct condom use (49%), prescribing emergency contraception (52%), and counseling about pregnancy termination (53%). Many residents further reported limited experience with pelvic exams and prescribing contraception. Only 38% of residents had conducted greater than 20 pelvic exams with female teens; 58% had conducted greater than 10. Approximately 31% of residents had prescribed contraception to more than 20 adolescents; 51% had prescribed contraception to greater than 10. Numbers remain low, even when interns are excluded from the analysis. Only 52% of upper-level residents had conducted greater than 20 pelvic exams with female teens; 44% of upper level residents had prescribed contraception to more than 20 adolescents.

Significant differences by field were found for the majority of survey items (Table 4). Similar to the deficiencies noted in responses to training questions, OB-GYN residents were significantly less likely than FM and pediatric residents to have had at least one experience with an adolescent patient defining confidentiality, evaluating positive aspects of life or providing several preventive services including counseling an obese teen about weight loss; counseling a depressed or suicidal teen; counseling about alcohol or drug use; and discussing sexual partners. The significance of the difference noted for defining confidentiality, counseling a depressed adolescent, counseling about

drug use, and discussing sexual partners disappears when interns are excluded from the analysis but the trend remains the same (Table 7). Interestingly, even though OB-GYN residents were significantly less likely to have counseled a teen about alcohol or drug use, they were significantly more likely to have had referred an adolescent to a substance abuse program compared to FM and pediatric residents. Pediatric residents were significantly less likely than FM and OB-GYN to have had at least one encounter with an adolescent in which they counseled an adolescent who experienced physical abuse or counseled about pregnancy termination. Moreover, when interns are excluded from the analysis, pediatric residents report significantly less experience than FM and OB-GYN residents in prescribing emergency contraception (Table 7). Pediatric residents also reported significantly lower rates of conducting pelvic exams and prescribing contraception compared to OB-GYN and FM residents. Around 15% of pediatric residents reported they had never conducted a pelvic exam and 56% conducted fewer than 11. Approximately 26% of pediatric residents reported they had never prescribed contraception and 70% had prescribed contraception less than 11 times. FM residents were significantly more likely to counsel about contraceptive options than OB-GYN or pediatric residents. However, this difference disappears when interns are excluded from the analysis (Table 7). FM residents were less likely than pediatric residents but more likely than OB-GYN residents to have counseled a suicidal adolescent. In addition, FM residents were less likely than OB-GYN residents but more likely than pediatric residents to have counseled about pregnancy termination options.

Table 4 - Resident experience with adolescent patients. Percentages reflect the percent of residents within a field that answered "yes" to having had at least one encounter of a given activity compared to residents in that same field that answered "no".†

Topic	EXP*	All (n = 87)	OBG (n = 31)	FM (n = 29)	Peds (n = 27)	p value
Activity with Adolescent Patients		n (%)	n (%)	n (%)	n (%)	
General						
Defined confidentiality	Yes	82 (94.3)	26 (83.9)	29 (100)	27 (100)	**0.010**
Evaluated positive aspects of life	Yes	62 (84.9)	9 (52.9)	27 (93.1)	26 (96.3)	**< 0.001**
Counseled obese adolescent about weight loss	Yes	71 (81.6)	18 (58.1)	26 (89.7)	27 (100)	**< 0.001**
Psychiatric						
Counseled adolescent with eating disorder	Yes	38 (43.7)	10 (32.3)	15 (51.7)	13 (48.2)	0.269
Counseled adolescent with depression	Yes	61 (70.1)	17 (54.8)	25 (86.2)	19 (70.4)	**0.030**
Counseled suicidal adolescent	Yes	37 (42.5)	9 (29.0)	11 (37.9)	17 (63.0)	**0.028**
Substance Abuse						
Counseled about tobacco cessation	Yes	79 (90.8)	26 (83.9)	27 (93.1)	26 (96.3)	0.267
Counseled about alcohol use	Yes	76 (87.4)	22 (71.0)	28 (96.6)	26 (96.3)	**0.003**
Counseled about drug use	Yes	78 (89.7)	23 (74.2)	28 (96.6)	27 (100)	**0.002**
Referred to substance abuse treatment program	Yes	23 (26.4)	14 (45.2)	5 (17.2)	4 (14.8)	**0.013**
Abuse						
Counseled adolescent who experienced physical abuse	Yes	27 (31.0)	12 (38.7)	11 (37.9)	4 (14.8)	**0.090**
Counseled adolescent who experienced sexual abuse	Yes	36 (41.9)	13 (41.9)	11 (37.9)	12 (46.2)	0.827
Sexual Health						
Discussed number and gender of sexual partners	Yes	76 (87.4)	23 (74.2)	27 (93.1)	26 (96.3)	**0.035**
Counseled about STD risk and prevention	Yes	84 (96.6)	28 (90.3)	29 (100)	27 (100)	0.105
Taught correct condom use	Yes	42 (48.8)	14 (46.7)	16 (55.2)	12 (44.4)	0.694
Counseled about contraceptive options	Yes	78 (89.7)	26 (83.9)	29 (100)	23 (85.2)	**0.057**
Prescribed Emergency Contraception	Yes	45 (51.7)	17 (54.8)	18 (62.1)	10 (37.0)	0.158
Counseled about pregnancy termination options	Yes	46 (52.9)	22 (71.0)	17 (58.6)	7 (25.9)	**0.002**
Number of times performed pelvic exam	0	7 (8.1)	2 (6.7)	1 (3.5)	4 (14.8)	**0.060**
	1-10	28 (32.6)	7 (23.3)	10 (34.5)	11 (40.7)	
	11-20	18 (20.9)	7 (23.3)	3 (10.3)	8 (29.6)	
	21-50	22 (25.6)	8 (26.7)	10 (34.5)	4 (14.8)	
	> 50	11 (12.8)	6 (20.0)	5 (17.2)	0 (0)	
Number of times prescribed contraception	0	10 (11.6)	2 (6.7)	1 (3.5)	7 (25.9)	**0.003**
	1-10	32 (37.2)	6 (20.0)	14 (48.2)	12 (44.4)	
	11-20	17 (19.8)	9 (30.0)	3 (10.3)	5 (18.5)	
	21-50	14 (16.3)	4 (13.3)	8 (27.6)	2 (7.4)	
	> 50	13 (15.1)	9 (30.0)	3 (10.3)	1 (3.7)	

***** EXP = experience. 'Yes' refers to having had at least one clinical encounter of a given activity. † Except for the last two items in which percentages reflect resident reports of having had the # of clinical encounters as categorized in the table.

Comfort

Overall, 94% of residents reported they feel comfortable about providing health care to adolescents (Table 5). In addition, around 90-100% of residents reported they feel comfortable discussing eating habits and body image; depression and suicide; tobacco, alcohol and drug use; physical and sexual abuse; and sex-related issues with adolescents.

A significant difference was noted between fields for two comfort categories (Table 5). OB-GYN residents reported significantly less comfort discussing eating habits/body image and depression/suicide. The significance of this difference disappears when interns are excluded from analysis but the trend remains the same (Table 7).

Table 5 - Resident comfort with providing health care to adolescents. Percentages reflect the percent of residents within a given field that answered either "strongly agree" or "agree" (Agree) compared to residents in that same field that answered "strongly disagree" or "disagree" (Disagree, not shown).

Topic	Comfort	All (n = 87)	OBG (n = 31)	FM (n = 29)	Peds (n = 27)	p value
Activity with Adolescent Patients		n (%)	n (%)	n (%)	n (%)	
General						
Comfortable providing health care to adolescents	Agree*	79 (94.1)	27 (87.1)	27 (96.4)	25 (100)	0.154
Comfortable discussing eating habits & body image	Agree	76 (89.4)	24 (77.4)	27 (96.4)	25 (96.2)	**0.041**
Psychiatric						
Comfortable discussing depression & suicidal ideation	Agree	80 (93.0)	25 (80.7)	29 (100)	26 (100)	**0.003**
Substance Abuse						
Comfortable discussing tobacco, alcohol and drug use	Agree	85 (100)	30 (100)	29 (100)	26 (100)	‡
Abuse						
Comfortable asking about physical and sexual abuse	Agree	79 (91.9)	28 (90.3)	27 (93.1)	24 (92.3)	1.000
Sexual Health						
Comfortable discussing sex-related issues	Agree	84 (100)	30 (100)	28 (100)	26 (100)	‡

* "Agree" represents a combination of residents who answered either "strongly agree" or "agree". "Disagree" represents a combination of residents who answered "strongly disagree" or "disagree". ‡ P value not calculated.

Knowledge

Overall, 91% of residents correctly reported that adolescents can consent for contraception without parental notification in the state of their residency (Table 6). Fewer residents (73%) correctly reported that adolescents can consent for abortion without parental notification. There were no significant differences between fields.

Table 6 - Resident knowledge of adolescent rights to consent for contraception or an abortion in state of residency without parental notification.

Topic	Answer	All (n = 87)	OBG (n = 31)	FM (n = 29)	Peds (n = 27)	p value
		n (%)	n (%)	n (%)	n (%)	
Teen can consent for contraception	True	78 (90.7)	28 (90.3)	25 (86.2)	25 (96.2)	0.667
without parental notification	False	1 (1.2)	0 (0)	1 (3.5)	0 (0)	
	I don't know	7 (8.1)	3 (9.7)	3 (10.3)	1 (3.9)	
Teen can consent for an abortion	True	63 (73.3)	25 (80.7)	18 (62.1)	20 (76.9)	0.135
without parental notification	False	5 (5.8)	3 (9.7)	2 (6.9)	0 (0)	
	I don't know	18 (20.9)	3 (9.7)	9 (31.0)	6 (23.1)	

Table 7 - Survey items for which differences by field are altered when intern level residents are excluded from the analysis.

Survey Section **Question Topic**	Answer	All (n = 60) n (%)	OBG (n = 22) **n (%)**	FM (n = 19) **n (%)**	Peds (n = 19) **n (%)**	p value
Training						
Conduct pelvic exams with sample collection	Good	53 (88.3)	18 (81.8)	19 (100)	16 (84.2)	0.174
Counsel about contraception	Good	55 (91.7)	19 (86.4)	19 (100)	17 (89.5)	0.357
Prescribe contraception	Good	53 (88.3)	19 (86.4)	19 (100)	15 (78.9)	0.137
Experience						
Define confidentiality	Yes	57 (95.0)	19 (86.4)	19 (100)	19 (100)	0.102
Counseled adolescent with depression	Yes	46 (76.7)	14 (63.6)	17 (89.5)	15 (78.9)	0.148
Counseled about drug use	Yes	57 (95.0)	19 (86.4)	19 (100)	19 (100)	0.102
Discussed number and gender of sexual partners	Yes	55 (91.7)	18 (81.8)	18 (94.7)	19 (100)	0.118
Counseled about contraceptive options	Yes	59 (98.3)	21 (95.5)	19 (100)	19 (100)	1.000
Prescribed Emergency Contraception	Yes	42 (70.0)	16 (72.7)	17 (89.5)	9 (47.4)	**0.019***
Comfort						
Comfortable discussing eating habits & body image	Agree	53 (91.4)	18 (81.8)	17 (94.4)	18 (100)	0.175
Comfortable discussing depression and suicide	Agree	57 (96.6)	20 (90.9)	19 (100)	18 (100)	0.324

*In this item, the difference between fields becomes significant when interns are excluded. For other items in table, significance is lost when interns are excluded from analysis.

Potential confounding variables

Three demographic variables, sex, program affiliation and intention to specialize, were noted to be significantly different between fields and thus had the potential to confound survey results by field. Chi-squared or Fisher's exact test analysis of survey

responses by “intention to specialize” revealed no significant differences. Chi-squared or Fisher’s exact test analysis of survey responses by “program affiliation” or “sex” demonstrated several survey items where a significant difference was noted. These survey items are presented in Tables 8 with the results stratified by “program affiliation” and “sex”. Seventeen survey items were identified in which program affiliation potentially confounded survey response. These are presented in Table 8 with the results of stratified analysis by “program affiliation”. Given the complete absence of OB-GYN residents in programs with religious affiliations, stratified analysis was only able to analyze the effect of non-religious program affiliation on survey responses by field. Five survey items were identified in which sex potentially confounded survey response (Table 9). These survey items are presented in Table 9 with the results of stratified analysis for “sex” by field.

Table 8 - Survey items for which Program Affiliation potentially affected survey result. Items presented with results of analysis excluding residents in programs with a religious hospital affiliation. *

Survey Section **Question Topic**	**Answer**	**All (n = 55)** n (%)	**OBG (n = 31)** **n (%)**	**FM (n = 15)** **n (%)**	**Peds (n = 10)** **n (%)**	**p value**
Scope						
Instruct where to go to obtain an abortion	Yes	52 (96.3)	31 (100)	14 (100)	7 (77.8)	**0.025**
Training						
Define confidentiality	Good	40 (72.7)	20 (64.5)	12 (85.7)	8 (80.0)	0.325
Counsel about eating habits & physical activity	Good	33 (60.0)	13 (41.9)	11 (78.6)	9 (90.0)	**0.007**
Counsel about eating disorders and body image	Good	25 (45.5)	12 (38.7)	9 (64.3)	4 (40.0)	0.260
Screen for depression and suicidal ideation	Good	36 (65.4)	16 (51.6)	12 (85.7)	8 (80.0)	**0.056**
Screen & counsel for tobacco, alcohol and drug use	Good	43 (78.2)	22 (71.0)	13 (92.9)	8 (80.0)	0.240
Screen for physical abuse	Good	35 (63.6)	18 (58.1)	78.6 (11)	6 (60.0)	0.402
Counsel about STD prevention	Good	48 (87.3)	27 (87.1)	13 (92.9)	8 (80.0)	0.742
Experience						
Counseled obese adolescent about weight loss	Yes	41 (74.6)	18 (58.1)	13 (92.9)	10 (100)	**0.005**
Counseled adolescent with eating disorder	Yes	19 (34.5)	10 (32.3)	5 (35.7)	4 (40.0)	0.928
Counseled adolescent with depression	Yes	34 (61.8)	17 (54.8)	13 (92.9)	4 (40.0)	**0.011**
Counseled about alcohol use	Yes	45 (81.8)	22 (71.0)	14 (100)	9 (90.0)	**0.045**
Discussed number and gender of sexual partners	Yes	45 (81.8)	23 (74.2)	13 (92.9)	9 (90.0)	0.312
Counseled about pregnancy termination options	Yes	33 (60.0)	22 (71.0)	10 (71.4)	1 (10.0)	**0.002**
Number of times prescribed contraception	0	6 (11)	2 (6.7)	1 (7.1)	3 (30.0)	**0.034**
	1-10	16 (29.6)	7 (23.3)	5 (35.7)	4 (40.0)	
	11-20	9 (16.7)	7 (23.3)	0 (0)	2 (20.0)	
	21-50	14 (25.9)	8 (26.7)	5 (35.7)	1 (10.0)	
	> 50	9 (16.7)	6 (20.0)	3 (21.4)	0 (0)	
Comfort						
Comfortable discussing eating habits & body image	Agree	45 (83.3)	24 (77.4)	12 (92.3)	9 (90.0)	0.531
Comfortable discussing depression and suicide	Agree	49 (89.1)	25 (80.7)	14 (100)	10 (100)	0.114

* Questions for which program affiliation may have confounded survey response were identified by chi-square or Fisher's Exact Test analysis of survey responses by program affiliation. These questions are presented in this table with the results of Fisher's Exact Test analysis for data set that excludes residents from programs with a religious hospital affiliation. Only data for residents in programs with a non-religious affiliation are presented because residents with a religious affiliation could not be analyzed due to absence of OBG residents in programs with a religious affiliation.

Table 9 - Stratified analysis of sex for each field category. *

Survey Section **Question Topic**	**Sex**	**Answer**	**All (n = 87)** n (%)	**OBG (n = 31)** **n (%)**	**FM (n = 29)** **n (%)**	**Peds (n = 27)** **n (%)**	**p value**
Scope							
Instruct where to go to obtain an abortion	F	Yes	47 (92.2)	24 (100)	13 (92.9)	10 (76.9)	**0.023**
	M	Yes	23 (74.2)	6 (100)	10 (66.7)	7 (70.0)	0.370
Training							
Conduct pelvic exams with sample collection	F	Good	47 (90.4)	22 (91.7)	14 (100)	11 (78.6)	0.150
	M	Good	23 (74.2)	3 (50.0)	15 (100)	5 (50.0)	**0.003**
Counsel about contraception	F	Good	45 (86.5)	20 (83.3)	14 (100)	11 (78.6)	0.319
	M	Good	22 (71.0)	4 (66.7)	13 (86.7)	5 (50.0)	0.148
Experience							
Counseled obese adolescent about weight loss	F	Yes	39 (75.0)	13 (54.2)	12 (85.7)	14 (100)	**0.003**
	M	Yes	29 (93.5)	5 (83.3)	14 (93.3)	10 (100)	0.452
Comfort							
Comfortable discussing depression and suicide	F	Agree	46 (88.5)	18 (75.0)	14 (100)	14 (100)	**0.030**
	M	Agree	30 (100)	6 (100)	15 (100)	9 (100)	‡

*Questions for which sex may have confounded survey response were identified by chi-square or Fisher's Exact Test analysis of survey responses by sex. These questions are presented in this table with the results of Fisher's Exact Test analysis stratified by sex for each field.
‡ P value not calculated.

Discussion

Most residents from all three fields felt the full range of adolescent preventive and clinical services represented in the survey fell under the scope of their practice. Most residents also reported high levels of comfort with examined aspects of adolescent care. In regard to some activities, the positive scope and comfort responses were matched by high reported levels of training and experience, including defining confidentiality; counseling about eating, exercise and obesity; counseling about substance abuse; and discussing STDs, sexual partners and contraception. However, for multiple key adolescent services, considerable discrepancies existed between reported levels of training and experience and the positive responses concerning scope and comfort.

General health care

Ninety percent or higher of all FM and pediatric residents reported experience and adequate training with adolescent general health care services including defining confidentiality; counseling about diet, exercise and obesity; and evaluating positive aspects of a teenager's life. On the contrary, OB-GYN residents reported significantly less training and experience with these same services.

Overall the high reported training and experience in defining confidentiality is encouraging. Adolescents are more likely to seek health care and disclose risk behaviors to providers when they are guaranteed confidential services [6,9,12,59-62]. Recent investigations have demonstrated a deficiency among practicing physicians in discussing confidentiality with teenagers [62,63]. In a survey of 2224 high students, 76% wanted confidential care, yet 45% believed their physician to provide it and only 28% had explicitly discussed it [62]. The high training and experience in defining confidentiality among FM and pediatric residents may reflect an increased emphasis of this skill and translate into increased provision of confidentiality agreements among future providers of teen health care. However, it is concerning that 35% of OB-GYN residents reported they had never defined confidentiality within the doctor-patient relationship with an adolescent, especially given the sensitive nature of many teen OB-GYN visits. This might be explained by a greater number of adolescents appearing for OB-GYN appointments without guardians in comparison to pediatric and FM visits, thereby seeming to obviate the need to define confidentiality. Yet, studies have shown that defining confidentiality in the doctor-patient relationship effects many aspects of adolescent comfort in the medical setting including: openness with providers about risk factors; willingness to discuss

sexual health concerns and sexual behavior; willingness to seek future health care; and completion of pelvic exams even when an adolescent seeks health care without a guardian [59,60,62].

The high rate of training and experience with counseling about diet, exercise and obesity reported by FM and pediatric residents might indicate that training in these issues has improved over the past 10 years. According to current recommendations, physicians should provide counseling about weight, diet and exercise to all adolescents [64]. Yet, documented counseling of adolescents by practicing physicians concerning weight, diet and exercise falls below recommended guidelines, ranging between 22 to 80% [5, 16, 64,65]. The observed trend of decreased counseling by OB-GYN residents about weight, diet and exercise has also been documented in other studies. A quarter of OB-GYN residents reported counseling more than half their patients concerning diet and 39% reported counseling more than half of their patients concerning exercise in the 1995 in-service examination [52]. Moreover, FM residents reported feeling better prepared than OB-GYN residents to counsel about diet and exercise in a national survey of FM, IM and OB-GYN residents administered in 1998 [51]. The pattern has further been noted with practicing physicians. FM physicians were significantly more likely to provide diet counseling than OB-GYN doctors in both the 1985 and 1997-1998 NAMCS [66]. Given the vast increase seen in overweight adolescents in the U.S., it is of great importance for all providers of adolescent health care to address weight, diet and exercise in teen visits. The significantly lower rates training and experience reported by OB-GYN residents in regard to this type of counseling highlights an area of needed improvement in resident training, especially if OB-GYN physicians are to provide more primary care for

adolescents with the proposed initial reproductive health visit. As it stands now, many adolescents rely on OB-GYN services as their only source of health care; 41% of teenagers surveyed in Los Angeles in 1994 reported exclusive use of Planned Parenthood clinics for health care [67].

Psychological issues

Overall residents reported deficit training and experience with all represented mental health issues including eating disorders, depression, and suicide. Similarly low rates of preventive screening and counseling of adolescents for mental health issues have been noted in practicing physicians [5,24,65,68,69], suggesting little improvement in the training of future physicians to adequately address these issues. In a 1995 survey of all FM physicians and pediatricians in Maryland, 47% of physicians reported having had a patient within the last year who attempted suicide yet only 23% of physicians frequently screened teenagers for suicide risk factors [24]. Lack of screening was significantly correlated with insufficient training and knowledge. There is a clear need for effective and widespread screening and counseling of teenagers for mental health issues. Only 25-33% of depressed adolescents are receiving care [70]. Eight percent of teenagers attempt suicide each year; 12% go without food for over 24 hours to try to lose weight and 5% use laxatives or induce vomiting to lose weight [2]. The deficiencies reported in these areas in our survey suggest the need for improved training and experience in all residencies with respect to mental health issues.

OB-GYN residents reported particularly low levels of training, experience and comfort with adolescent mental health issues. This trend is consistent with trends observed in other resident investigations. Only one-fifth of OB-GYN residents reported

addressing emotional health with more than half of their patients in the 1995 in-service examination [52]. Moreover, FM residents reported feeling better prepared than OB-GYN residents to counsel about depression in a national survey of FM, IM and OB-GYN residents administered in 1998 [51]. In addition to the importance of mental health issues in the provision of primary care to teenagers, eating disorders and depression have been associated with poor pregnancy outcomes and risky sexual behavior in female adolescents [71-73]. As with the other fields, increased training and emphasis on addressing psychological issues especially appears to be needed in OB-GYN programs.

Substance abuse

In general, all residents reported fairly high levels of training and experience with counseling adolescents about tobacco, alcohol and drug use. While practicing physicians have high documented rates of screening for smoking among teenagers [74], the high reported level of addressing alcohol and drug use in this study is a distinct improvement over trends documented in the practicing physician population [16,75,76]. In a recent focus group, physicians conveyed that insufficient time and lack of training were the top two barriers to screening teens for substance abuse [76]. Thus, the high rates of experience and training reported by residents in this study could help reduce barriers and improve screening adolescents for substance abuse in future generations of practicing physicians. Unfortunately, residents reported very low experience with referring teenagers to substance abuse treatment services. A similar deficiency in referring youth to smoking cessation services or substance abuse programs has been noted among practicing physicians [77,78]. A chart review of 400 adolescents with a substance abuse diagnosis in a California HMO showed a 16% referral rate to substance abuse treatment

[77]. Most community health clinics and hospitals have most community health centers had some on-site mental health/substance abuse services [79]. It is not sufficient to simply screen for substance abuse; residents need to learn how to utilize resources available to help their patients with substance abuse problems.

While all residents reported fairly high levels of counseling about tobacco, alcohol and drug use, OB-GYN residents reported significantly less training and experience with counseling about alcohol and drug use, highlighting another area in which OB-GYN training could be strengthened. The levels reported by OB-GYN residents in our study is similar to those reported by OB-GYN residents in the 1995 in-service examination [52]. Interestingly, OB-GYN residents were significantly more likely to have referred an adolescent to substance abuse treatment compared to FM and pediatric residents. This could reflect the greater number of pregnant teens with substance abuse issues seen by OB-GYN residents and the emphasis placed on connecting pregnant women to treatment services. If so, learning from the manner in which this skill is taught to OB-GYN residents could improve training in referring non-pregnant adolescent patients to substance abuse treatment and be used as a model for teaching the skill in FM and pediatric programs.

Physical and sexual abuse

Overall, residents reported low levels of training and experience with addressing physical and sexual abuse among teenagers. Adolescents experience high rates of physical and sexual abuse. During the year 2005, 9.2% of teenagers reported they experienced physical violence from their boyfriend or girlfriend and 7.5% reported they had been forced to have sex against their will [2]. In a survey of 1,957 high school

students in Oregon, 32% reported having ever been physically abused, with 17% having been abused in the past year [80]. Research indicates adolescents would like their providers to address abuse with them. In a survey of 645 adolescent and young adult women, almost all women supported screening for intimate partner violence and 90% felt their health care provider should conduct this screening [81]. Yet despite high rates of abuse and the desire to receive assistance from physicians, documented provider screening and counseling for abuse has consistently been notoriously low [65,82,83]. For example, despite AAP and ACOG guidelines for routine screening for physical abuse during prenatal visits, in a survey of women from 14 states, only 22-39% of health care providers inquired about physical abuse during prenatal visits [83]. While all residents in our survey reported low rates of training and experience with counseling about physical and sexual abuse, pediatric residents reported significantly lower experience with addressing physical abuse with teenagers than FM and OB-GYN residents. This result is supported by other investigations of pediatric residents and pediatricians. Only 9% of pediatric residents surveyed from 4 programs in 1996-1997 reported routinely screened for dating violence [84]; these residents cited insufficient time and training as barriers to screening. In an examination of preventive services practiced among pediatricians in a California HMO, fewer than 20% reported screening for physical or sexual abuse [65]. Pediatrician efficacy in detecting physical abuse has been correlated with a higher level of child abuse education [82]. The practices and barriers reported among practicing physicians and residents in this and other studies indicate a clear need to improve physician training in addressing physical and sexual abuse among adolescents.

Sexual health

Adolescents want and need to talk to physicians about sexual health issues [12,31,85]. In general, in our study, residents reported a high level of training and experience with discussing number and gender of sexual partners; counseling about STD risk and prevention; and counseling about contraceptive options. However, residents reported lower levels of training and experience with teaching correct condom use; conducting pelvic exams; prescribing contraception; counseling about and prescribing emergency contraception; and counseling about pregnancy termination. This pattern of spotty delivery of preventive and clinical services to adolescents concerning sexual health issues among primary care providers has been well documented in the literature [2,8,16,36,37,85,86]. STD counseling and clinical services tends to more readily provided to teenagers than other sexual health services in the practicing physician population as well [8,38].

Gay, lesbian and bisexual youth are at a higher risk for suicide, substance abuse and risky sexual practices [87-89]. Thus, it is important for physicians to address sexual orientation with teens and provide supportive services as needed. The AAP and Society for Adolescent Medicine (SAM) recommend non-judgmental counseling for adolescents about sexual orientation [85,90]. In spite of this providers do not tend to discuss sexual orientation with teenagers. Two-thirds of gay, lesbian and bisexual teenagers surveyed in Colorado in 1998 had wanted to discuss sexual orientation with their physicians but were never asked [61]. Physicians only asked 8% of high school students surveyed in an urban California school district about sexual orientation [85]. The high level of experience discussing sexual partners with teenagers observed among residents in our study suggests

potential improvement with concern to documented rates of discussing sexual orientation and habits in practicing physicians. However, while the average training and experience reported by residents in our study was high, discussion of sexual partners was the only sexual health service for which OB-GYN residents reported significantly lower rates of training and experience than FM and pediatric residents. This is consistent with deficiencies noted concerning preventive and behavioral counseling throughout this study and suggests that the delivery of preventive counseling services tend to be neglected in OB-GYN training.

In contrary to the high levels of experience reported with regard to STD counseling and discussion of sexual partners, residents reported especially low experience with teaching correct condom use, emergency contraception and counseling about abortion. Less than half of all residents have ever provided instruction on condom use to an adolescent patient and 53% report insufficient training. While specific instructions about condom use may seem overly elementary to physicians, teenagers desire the information. In the Kasier National Survey of Adolescents and Young Adults, teenagers conveyed several misconceptions about condom use and effectiveness and expressed an interest in learning more about condoms [31]. Lack of counseling on condom use has also been noted among practicing physicians [21,85]. For instance, only 13% of teenagers reported discussing how to use condoms with their health care provider in a survey of 2026 secondary students in an urban California school district [85]. In order to address adolescent health care needs, teaching about condom use should be adopted as a routine preventive service for teenagers, and residents need to be trained to instruct their patients in correct condom use.

The low level of training and experience in emergency contraception noted by residents in this survey has also been documented among practicing physicians [37,91]. Pediatric residents, in particular, reported significantly lower levels of training and experience with emergency contraception than FM or OB-GYN residents. Furthermore, significantly fewer pediatric residents compared to FM and OB-GYN residents felt prescribing emergency contraception fell under the scope of their practice. Among practicing physicians, pediatricians report particularly low levels of prescribing emergency contraception citing inadequate training as the reason [37,92]. The Society for Adolescent Medicine (SAM), ACOG, and AAP all support adolescent access to emergency contraception and encourage adolescent providers to counsel all adolescents about emergency contraception during visits for acute and routine health care [93-95]. Our study, consistent with results from other studies, suggests that residents require more training and experience with emergency contraception if future practitioners are to routinely incorporate counseling and prescriptions for emergency contraception into their practice. In a recent study, a short lecture on emergency contraception delivered to physicians from different specialties significantly changed provider attitudes about emergency contraception and increased provider counseling and prescription of emergency contraception [91].

While the abortion rate has been declining in adolescents, 1.5% of female teenagers seek abortions [96]. The AAP upholds an adolescent's right to confidential care and counseling when considering an abortion [97]. The majority of SAM members also support the right of an adolescent to choose to have an abortion [56]. Adolescent providers need to be prepared to counsel about pregnancy termination options regardless

of their personal convictions. Residents reported low levels of training and experience with counseling about pregnancy termination. In addition, 37% of residents did not know that a teenager is able to consent for abortion in CT and NY without parental notification. At the very least, providers in adolescent health care should be aware of regulations that affect teen access to health services. In particular, pediatric residents reported significantly less training and experience with abortion counseling compared to FM and OB-GYN residents. In addition, significantly fewer pediatric residents considered counseling about abortion as part of their scope of practice. Pediatric and FM residents were significantly less likely to consider referring an adolescent to a clinic to obtain an abortion as part of the scope of their practice.

Overall pediatric residents reported deficiencies in many of the services that adolescents desire most [31]. With the exception of discussing sexual partners, pediatric residents reported considerably less training and experience with sexual health topics than FM or OB-GYN residents. Over half of pediatric residents had conducted 10 or fewer pelvic exams on female adolescents; 15% had never conducted a pelvic exam. Over 70% of pediatric residents had prescribed contraception 10 or fewer times and 26% had never prescribed contraception. In addition, only 26% had counseled about pregnancy termination and 36% had prescribed emergency contraception. This is consistent with patterns observed among practicing physicians [8,36,38,58,86,98]. A telephone survey of 434 FM and pediatric practices in the Washington D.C. area found considerable differences between specialties in the provision of pelvic exams and contraceptive services to adolescents [8]. Around 50% of pediatric services provided pelvic exams and 59% provided contraceptive services to teenagers compared to 97% of

FM practices. Around two thirds of the AAP membership reported they were not entirely comfortable with providing pelvic exams in 1993 [36]. The responses obtained in our survey suggest the increased emphasis on adolescent medicine during the past decade and the creation of a required pediatric residency rotation in adolescent medicine has fallen short of providing adequate training in sexual health issues.

Gender and program affiliation

Religious program affiliation had the potential to confound results in several survey items (Table 8). The analysis of the effect of a religious program affiliation was difficult given the complete lack of OB-GYN residents in programs with a religious affiliation. In order to truly be able to test for this effect, we would need a larger sample size and representation of OB-GYN programs with a religious affiliation. For the majority of survey items for which program affiliation was identified as having a potential significant influence, the pattern among residents with non-religious affiliations mirrored the patterns observed in the full data set. This suggests that, in general, program affiliation did not have a considerable influence and that differences in significance reflect underlying power differences given a smaller sample size rather than a program affiliation effect. Nonetheless, careful consideration of the results of stratified analysis, suggests a true program affiliation effect occurred with regard to FM residents and items concerning abortion. In the absence of FM residents in programs with a religious affiliation, FM resident positive responses to abortion questions concerning scope and experience increased substantially, matching the level of positive response observed in OB-GYN residents. Interestingly, the opposite effect occurred concerning pediatric residents. With the exclusion of residents in programs with a religious affiliation,

pediatric residents reported even less experience with counseling teenagers about abortion. Similar decreases in training and experience were observed for overall percentages in many counseling questions concerning diet, exercise, obesity, depression, suicide, substance abuse, physical abuse, and sexual partners. In particular, with the exclusion of residents in religious-affiliated programs, pediatric residents reported significantly less experience counseling about depression and considerably less training in eating disorders and physical abuse. In addition pediatric experience with prescribing contraception also decreased. To a lesser degree, decreases were also observed in FM resident responses for some items when residents in programs with a religious affiliation are excluded. In particular, considerable decreases were noted in the percent of FM residents who reported adequate training in diet, exercise and eating disorders. In addition, a decrease was observed in the percent of FM residents with experience in counseling about eating disorders. These decreased percentages observed among pediatric and FM residents may reflect a difference in program focus. Pediatric and FM residents in programs with religious affiliations were drawn from residents at University of Connecticut programs. The University of Connecticut is a state school with a strong focus in primary care. On the other hand, pediatric and FM residents in programs with non-religious affiliations were drawn from programs with private academic affiliations. The greater decreases observed with pediatric vs. FM residents may further reflect difference in the primary focus of these programs. The Yale pediatric program has a strong focus towards the creation of pediatric specialists while the Montefiore/Einstein FM program is more generalist in nature. Interestingly, there were no significant differences overall between residents who intended to specialize compared to residents

who intended to become generalists, unlike that reported by another study of preventive service delivery by primary care residents [306]. It may be, that the specialist-generalist effect on resident training and experience is more significant at the program level than the individual level. It would be interesting to explore this association with a larger data set.

Female providers have been documented to provide more preventive services in several studies [7,38,40,54,55,56]. We did not observe this trend in our study. However, given the low number of male OB-GYN residents we would need larger sample size to fully evaluate the effect of gender. Five survey items were identified for which gender may have confounded survey responses (Table 9). Three of the items identified do not appear to reflect a real gender effect but rather a field difference between OB-GYN residents and FM/pediatric residents. Fewer male FM residents compared to female FM residents considered referring teenagers to abortion services as part of the scope of their practice. However, there was no significant difference noted between male residents in different fields. On the contrary, a significant difference is noted among female residents reflecting a field-specific difference with regard to pediatric residents. Among OB-GYNS, male residents reported greater experience counseling about weight loss and reported more comfort with discussing depression and suicide. However for both of these survey items, a significant difference between fields was observed among female residents that mirrors the result found for the full data set and not among male residents. Thus, the differences reflect a genuine field effect and not a gender difference. For the remaining two items, while a gender effect is noted, it does not influence the field analysis. OB-GYN and pediatric male residents were less likely to feel adequately training with regards to pelvic exams or counseling about contraception. However,

neither gender revealed significant differences by field with regard to counseling about contraception. There was a significant difference noted in pelvic exam training reported by male residents by field. OB-GYN and pediatric residents reported equally low training rates compared to FM residents.

Limitations

Our study had several limitations including sample size, sample characteristics, inaccuracies possible with self-report, and inconsistencies in the manner in which different fields interpreted survey questions. The power of our analysis to detect differences between fields was limited by size. In particular, our ability to analyze the effect of program affiliation and gender was limited by our sample as discussed previously. In addition, our sample included residents from a small geographic location and thus results cannot be extrapolated to other locations in the U.S. In the future, trends reported in the study should be substantiated by sampling residents from a greater number of programs representing a greater diversity in terms of location and program affiliation.

Given the patterns observed with physician self-report, it is likely that the survey responses observed provided an inflated view of the level of resident training, experience and comfort. A recent meta-analysis focused on the accuracy of physician self-report suggests physicians have limited ability to accurately self-assess, especially physicians who are the least skilled [99]. Resident misrepresentation was in fact directly noted during survey administration when residents exclaimed out loud that they did not know the answer to the knowledge questions about contraception and abortion but nonetheless decided on marking “True” rather than “I don’t know”. This likely resulted in an

inaccurate perception of resident knowledge of these issues. However, a similarly recent study focused on resident self-assessment found good internal consistency reliabilities and correlations between resident self-report and external chart review [100], suggesting self-report can provide valuable information about general trends. The manner in which resident experience was queried further may have contributed to an inflated view of resident experience since a single experience of a given activity was enough to qualify as experience. This does not necessarily correlate to the experience required for competency and the incorporation of the given activity into future practice. However, this suggests the deficiencies noted by the study are real and likely greater than those reported and thus lends further credence to study observations. Finally, there appears to have been some inconsistencies in the manner in which different fields interpreted survey questions, in particular with regard to sexual health items. OB-GYN resident training is focused on sexual health topics, thus it was surprising to note the occasional report of inadequate training for conducting pelvic exams and counseling about and prescribing contraception by upper level OB-GYN residents. While this may reflect real inadequacies, it could also reflect a more specific interpretation by OB-GYN residents in terms of training in these activities specifically for adolescents. This may not be comparable to the manner in which the question was interpreted by FM residents or be comparable to similar reports of deficient training by pediatric residents, who likely are not training in the skill at all rather than simply with respect to adolescents.

Finally, we chose to include all levels of residents in analysis. This may have resulted in decreased percentages reported for training and experience. However, interns were sampled towards the end of their first year and, as mentioned above, the method

used to determine experience refers to a single experience of a given activity. In addition, analysis of the data excluding interns revealed few significant changes in the trends observed when interns were included (Table 7). For the majority of survey items noted in Table 7, the trends remain the same but significance is lost. This may reflect more of a power issue with a decreased sample size than a significant intern effect. For one item, experience prescribing emergency contraception, the trend observed for the entire sample became significant when interns were excluded. With the exception of three training items that seem to reflect an different interpretation of the question by OB-GYN residents as discussed above, there was only one survey item, experience with counseling about contraceptive options, for which the exclusion of interns abolished the difference observed between fields. This was noted in the results section and is considered a viable representation of the comparison between fields in the discussion.

Conclusions

Ideally, residents in the primary specialties that provide health care to teenagers should receive training and experience that prepares them to deliver comprehensive health services to adolescents as indicated by GAPS, AAP, AAFP and ACOG. While there were some areas in which residents reported consistent positive responses regarding scope, training, experience and comfort, there were multiple services for which resident training and experience was limited. Several studies have noted a connection between inadequate physician provision of preventive and clinical services to adolescents and physician training and experience with such activities [14, 36-40, 101]. Therefore, it is important to provide residents with training and experiences that reflect the stated goals of comprehensive health care for adolescents in order to improve delivery of health

services to adolescents in the future. In particular the results of this study suggest all residents need considerably more training and experience with mental health issues, referring teenagers to substance abuse treatment programs, and addressing physical and sexual abuse. Overall, there were significant differences between fields. FM residents reported the greatest potential for providing comprehensive health care. However, they suffered from the overall deficiencies in training and experience noted above. OB-GYN residents reported deficiencies in the provision of several preventive counseling and general health services. Pediatric residents reported multiple deficiencies in the provision of sexual health services. These results suggest that considerable improvements need to be made in resident training in order for future pediatricians and obstetric-gynecologist to be in a position to provide the comprehensive health care for adolescents in their future practice as recommended by medical professional societies. Our results indicate, at this time and in the near future, it is unlikely that adolescents will be able to obtain the full range of recommended preventive and clinical services in a single physician visit. Our results suggest that residency programs could benefit from the inclusion of more effective training in adolescent medicine.

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