100.

Web-based Education on Primary Care of the Adolescent Patient: Comparison of Internal Medicine and Pediatric Programs Use and Test Scores
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**Purpose:** Pediatric training programs are required to include specific training in adolescent medicine. Internal Medicine programs are not, despite a call from the American College of Physicians to enhance internists’ capacity to care for adolescents. The Johns Hopkins Physician Education and Assessment Center (PEAC) offers internet based curricula for Pediatric and Internal Medicine (IM) training programs. Residents comprise 85% of registrants to each curriculum. In conjunction with adolescent medicine clinicians, we developed an interactive, case-based teaching module on caring for adolescent patients. Pre and post test questions are included in the module to assess knowledge. The purpose of this study is to compare usage, group pre/post test scores and satisfaction with the module between IM and Pediatric program users. We hypothesized that the IM user group, with less programmed education in adolescent medicine, would have greater pre to post test improvement in knowledge score.

**Methods:** Data on module use were collected for 3 academic years (2010-2013). Percent correct responses to pre and post-test questions on a) stages of cognitive development, b) limits of confidentiality, c) rationale for confidential services, and d) emancipation were calculated for both programs. User satisfaction data were averaged over three years for each program.

**Results:** An average of 1356 learners per year completed the adolescent medicine module on the IM site, 9.5% of registered users. 450 learners per year completed it on the Pediatric site, representing 14.7% of registered Pediatric users. Comparing percent correct responses on pre and post tests shows that both groups showed substantial improvement in percent correct after completion of the internet module. Averaged over 3 years, Pediatric program users had higher pretest scores (average 3.7 percentage points higher than IM) and higher post test scores (average 9.7 percentage points higher than IM). IM users showed greater improvement between pre and post-test than Pediatric users only in the first year the module was available. All those completing the module rated their level of satisfaction with the module. IM users rated it 4.0 on a 1-5 scale (1 = poor, 5 = excellent). Pediatric users rated it 3.7.

**Conclusions:** Both IM and Pediatric user groups show knowledge gain from use of an interactive, case-based online module on primary care of the adolescent. Use of internet based curricula such as PEAC is an acceptable and effective method of teaching about adolescent health in residency programs, including those without a specific focus on adolescent medicine. The results from this study demonstrate the potential of an online training module to efficiently target and increase provider knowledge on important adolescent care issues. Additional interventions to increase uptake of this method should be explored.
Sources of Support: none

101.

Global Trends in Adolescent Health Research: The Perspective from the Journal of Adolescent Health
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Purpose: The Journal of Adolescent Health (JAH), the official journal of the Society for Adolescent Health and Medicine is “a multidisciplinary scientific Journal, which seeks to publish new research findings in the field of Adolescent Medicine and Health” (jahonline.org). Over the past decade, JAH has emerged as the leading scientific journal in the field. The current analysis looks at the content of JAH over the past decade and seeks to identify differences in the focus of adolescent health research in high-income countries (HIC) versus low and middle-income countries (LMIC).

Methods: JAH published 1776 articles between January 2004 and July 2013, of which 1732 had associated keywords. Keywords are provided by authors to describe the overall content of their submitted manuscripts. These keywords were consolidated to create a list of 3248 unique keywords. The articles’ countries of origin were collected, and countries were characterized as either HIC or LMIC using the World Banks’ definitions, which are based upon per capita GDP. Top keywords (ranked by number of occurrences) for HIC and LMIC papers were then identified.

Results: Of the 1776 published papers, 144 (8.74%) were based on studies in LMIC. The only overlapping of keywords in the top ten were sexual behavior and depression. Sexual behavior ranked number one in HIC and number two in LMIC. Depression ranked number seven in HIC and number ten in LMIC. For HIC, sexual and reproductive health occurrences were limited to two keywords (sexual behavior and sexually transmitted infections), where as in LMIC, sexual and reproductive health occurrences were four keywords (sexual behavior, HIV, condom use, and pregnancy). The keywords in HIC represent a broader range of topics, including female, obesity, substance use, smoking, physical activity and young adults. LMIC are more limited in the in the scope of topics focusing on sexual and reproductive health in the regions from which the research originate (China and Sub-Saharan Africa).

Conclusions: The relative lack of published articles in the Journal of Adolescent Health from LMIC indicates that the research capabilities of these regions are inadequate. The content of published articles from HIC reflects a broad range of health topics affecting adolescents and young adults while the topics from LMIC remain focused on sexual and reproductive health. While many of the health issues published by HIC are also occurring in LMIC - including obesity, smoking, physical activity and gender violence - they are not yet reflected in the research from LMIC. Hopefully, health science research in LMIC will continue to improve in both breadth and quality.

Sources of Support: Society for Adolescent Health & Medicine
Association Between Asthma and Physical Activity in Adolescents: Analysis of Representative National Data from the 2011 Youth Risk Behavior Survey
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Purpose: Moderate physical activity (PA) has been shown to be beneficial for alleviating some of the symptoms of asthma in teens. Unfortunately, many youth with asthma avoid rigorous PA for fear of an asthma attack. Decreased PA is linked to being overweight or obese. If teens with asthma are at increased risk of being overweight or obese, then it is important to determine if their decreased activity is secondary to their asthma or their weight status. Previous analyses of national data have not accounted for the effect of BMI on PA in asthmatics. Using data from the 2011 Youth Risk Behavior Survey, this study will analyze the association between: (1) asthma and obesity, (2) asthma and PA, and (3) asthma and total sedentary behavior (TSB) in high school adolescents (HSS) while controlling for BMI.

Methods: Subjects were in the 9th to 12th grades (N=12286) and were categorized into current asthma (N=1499), past-not current asthma (N=1339) and never had asthma groups (N=9448) based on their answers to two questions: “Has a doctor or nurse ever told you that you have asthma?” and “Do you still have asthma?”. Primary analyses compared HSS with current asthma with HSS who never had asthma (controls) across the following domains: overweight, obesity, physical activity, and TSB while controlling for age, sex, grade, race/ethnicity and BMI using analyses specifically suited for survey data in SAS 9.2. Overweight was defined by BMI between 85th and 95th%ile, and obese as >95th %ile. Physical activity was assessed with a single question: “During the past 7 days, on how many days were you physically active for a total of at least 60 minutes per day?” TSB was determined by adding the responses to two questions regarding hours spent daily watching television and/or playing video games.

Results: 12.6% of HSS reported having current asthma and 76.52% never had asthma (10.90% had past asthma). Asthmatics were more likely to be obese (16.37% vs. 11.84%; adjusted Odds Ratio [aOR] = 1.513, 95% CI = 1.248, 1.835; p<.0001). A similar trend was noted for being overweight (aOR=1.17, 0.986, 1.396; p=.07). Teens with current asthma reported having sufficient PA (being physically active for 60 minutes for 5+ days per week) than those who never had asthma (aOR = 1.161, 95% CI = 1.012, 1.332). Students with current asthma reported being physically active for 60+ minutes on an average of 5.16 (Standard error of mean [SEM] = 0.10) days per week versus 5.10 (SEM = 0.07) days each week for students without asthma. No significant differences in TSB (= 5 hours) were found between the two groups. Past asthmatics did not differ from the other groups in any of the outcome variables examined.

Conclusions: Studies not controlling for BMI suggest asthmatics are less active than non-asthmatics. Analysis of the 2011 YRBS data shows that teens with asthma, though more likely to be heavy, are no less active than non-asthmatics when adjusted for BMI. Greater efforts to reduce obesity in asthmatics would likely result in even greater PA and overall health.

Sources of Support: None
The Interaction of Biological and Environmental Factors in Predicting Educational Attainment: The Role of Early Pubertal Development Among Emerging Adult Women in Rural and Urban Settings

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Purpose: Early pubertal development among girls is associated with numerous behavioral and physical health risk factors in adolescence and beyond. However, most research has focused on urban populations. The purpose of this study was to address this gap by examining the moderating effect of geographic location (urban v. rural) on the association between early menarche, a marker of early pubertal maturation, and educational attainment, a strong predictor of current and future health, among a diverse sample of emerging adult women.

Methods: Data are from a larger study focusing on the sexual and reproductive health of women aged 18-22 (mean=19.9, SD=1.5) from 44 urban (64.2%) and rural (35.8%) sites in Arizona. Participants represented the major ethnic groups in Arizona: white (39.2%), Latino (27.4%), Native American (16.0%), and black (14.1%). The analytic sample consisted of 1,907 women. Participants completed an anonymous questionnaire in English and Spanish. Educational attainment was determined by asking women how many years of schooling they had completed (range: 1=9th grade or less to 5=some college/college graduate). Pubertal timing was assessed using women’s self-reported age at menarche; early menarche was menarche occurring before age 12 (26.8 % of women in the study). A stepwise linear regression model was run in SPSS 21.0, controlling for participant age, race/ethnicity, mother’s educational attainment, and current marital status. Early age at menarche and geographic location were added in a second step and the interaction of the two variables was added in a third step.

Results: Average age at menarche did not differ by geographic location (mean=12.2, SD=1.6). Rural participants were more likely to have ever been married (24.4% v. 15.5%, p<.001) and have a mother who did not attend college (60.4% v. 52.8%, p=.002). Black participants were more likely to be living in urban communities (91.2%) and Native American participants were more likely to be living in rural communities (61.3%). Rural participants were less educated than urban participants (p<.001), as were participants who had experienced menarche “early” (before age 12) compared to those who had experienced menarche at age 12 or later (p<.001). After adjusting for participants’ age, race/ethnicity, mother’s educational attainment, and current marital status, living in an urban setting was associated with a higher level of education while early pubertal timing was not significant. The addition of the interaction between geographic location and early puberty was significant (B=.329, p<.005) suggesting that pubertal timing had differing associations with educational attainment based on geographical location. Early puberty was associated with less education among women living in rural settings (B=-.227, p=.028), but was not significantly associated with educational attainment among urban women (B=.050, p=.451).

Conclusions: Young women living in urban communities were buffered from the deleterious effects that early pubertal development had on rural participants’ educational attainment. Our findings suggest that...
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a girl’s community context may play a key role in mitigating the risks associated with early pubertal development.

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104.

**Improving a Pediatric Residency Rotation in Adolescent Medicine**
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**Purpose:** To guide our revision of an adolescent medicine rotation for pediatric residents, we conducted a learner and stakeholder needs assessment. Our objectives were to: 1) assess stakeholder perspectives on residents’ needs and how well those needs are met by the current curriculum and; 2) assess residents’ perspectives on their knowledge, needs, and expectations of the rotation.

**Methods:** We conducted an iterative assessment of perspectives of faculty and learners on the previous resident rotation in adolescent medicine. Faculty interviews included the pediatric residency director, chief residents, outpatient clinic site directors, and the course director and staff for the adolescent medicine rotation. We assessed where residents receive formal education about adolescent health, as well as the content and quality of that information. We then reviewed adolescent health content of the residents’ outpatient curricula and experiences, including the adolescent medicine rotation, outpatient continuity clinic, and the residency noon conference series. We asked faculty to discuss strengths and challenges of the rotation, and identify areas for update.

Next, we developed a tool to compare entering interns versus graduating residents with respect to knowledge about reproductive health. We asked residents to self-rate comfort and competence in common adolescent medicine scenarios.

**Results:** Faculty interviews revealed that residents are exposed to adolescent medicine in many settings. Their perceived needs included contraceptive/gynecologic education and a focus on adolescent medicine content for the Pediatric Board exam. Faculty also noted that pediatric residents are particularly challenged by patients with substance use issues and those in need of gynecologic exams.

Faculty identified several areas for improvement: residents 1) spent redundant time on inpatient rounds, 2) lacked materials focused on positive youth development, and 3) needed new community opportunities. We also found that rotation materials were disorganized and redundant.

Through the pediatrics residency program, we surveyed 23 incoming interns and 18 graduating residents. The graduating residents felt more comfortable and competent than their first year
counterparts in caring for adolescent patients. Program graduates answered the reproductive health knowledge questions more accurately than the first year residents, but there were notable gaps in their knowledge, e.g., about emergency contraception. The curriculum content assessment varied widely between the first and third year respondents. Interns reported broad interests in adolescent health ranging from history-taking to functional pain syndromes, whereas graduating residents felt well prepared, yet desired more reproductive health content.

Based on these results, we made a number of changes to the rotation, including an electronic format organized by the ACGME requirements. We added online reproductive health content with self-study time in place of lower-yield activities, and a resident self-reflection exercise before and after the rotation. Curricular changes are now being implemented and evaluated. We plan a qualitative study of residents’ pre- and post-rotation self-reflection data, and will examine adolescent medicine experiences of residents outside the adolescent medicine rotation.

**Conclusions:** It is important to continually update institutional curricula in adolescent medicine as the field of adolescent medicine – and our learners - evolve.

**Sources of Support:** None