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Original article

Cervical Cancer Screening, Pelvic Examinations, and Contraceptive Use Among Adolescent and Young Adult Females

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A B S T R A C T

Purpose: The purpose of this study was to characterize the association between pelvic examination and adolescent contraceptive method use in two time periods in the 2006–2010 National Survey of Family Growth (NSFG).

Methods: Using data from the 2006–2010 NSFG, we used descriptive statistics and multivariable regression models to examine the association between pelvic examination and/or Pap smear and use of effective or highly effective contraceptive methods during two time periods (2006–2008 and 2008–2010). We used the design characteristics of the NSFG to produce population estimates.

Results: More than half (57.3%) of our target population reported that they had a pelvic examination and/or Pap smear in the preceding 12 months. After considering health service use, pregnancy history, and demographic characteristics, receipt of pelvic/Pap remained significantly associated with use of effective or highly effective methods of contraception. Adjusted odds ratio = 1.86; 95% confidence interval (CI), 1.17–2.97. When we examined the relationship between pelvic/Pap and use of effective or highly effective methods within time periods, we found that the odds of effective contraception use were higher among adolescents who had received a Pap/pelvic examination in Period 1 (June 2006–May 2008) but not in Period 2 (June 2008–May 2010). Odds ratio = 3.05; 95% CI, 1.53–6.03 and odds ratio = 1.52; 95% CI, .88–2.62, Periods 1 and 2 respectively.

Conclusions: This finding provides some reassurance that although indications for pelvic examination and Pap smear among adolescents have decreased, the previously documented association between pelvic examination and effective or highly effective contraception appears to have decreased.

IMPLICATIONS AND CONTRIBUTION

Indications for conducting pelvic examinations among adolescents have decreased considerably, and there is some concern that consequent changes in health service utilization may negatively impact contraceptive method provision. Between 2006 and 2010, the positive association between pelvic examinations and contraception use decreased; during the latter half of the study period, there was no association between pelvic examination and use of effective contraception. Although early, these findings are reassuring.

Indications for conducting pelvic examinations among adolescents have decreased considerably over the past decade. Perhaps one of the most important reasons underlying this decline is changes to cervical cancer screening guidelines delaying screening until the age of 21 years regardless of sexual activity [1–3]. (In 2002, guidelines changed from routine screening starting at 18 years old to starting 3 years following onset of sexual intercourse. Subsequent guidelines [2008], delayed screening

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until 21 years old regardless of sexual activity.) Furthermore, although still required by many physicians [4], guidelines and experts have discouraged providers from requiring screening speculum or bimanual examinations in asymptomatic adolescents for over a decade, as this requirement creates unnecessary barriers [5–7]. Practice changes in response to these newer guidelines, as well as the increased availability of urine-based assays for sexually transmitted infection (STI) screening, should result in fewer screening pelvic examinations among adolescents. Indeed, between 2000 and 2010, the proportion of 18–21 year olds reporting that they had been screened for cervical cancer decreased from 74% to 53% [8]. Similar data on rates of pelvic examinations for other indications are not available. Whether and how individual physician practice changes will impact the delivery of other reproductive health services, such as contraceptive method provision, to adolescents is unclear.

There has been some concern that reducing screening pelvic exams, with or without Pap smears, may have unintended consequences on the delivery of other recommended reproductive health services, including contraception provision and STI screening [9], although there are little data to support this claim. One study of sexually active adolescents aged 15–20 years found that those who underwent cervical cancer screening in 2007 were significantly more likely to have chlamydia screening than those who did not undergo cervical cancer screening (43.6% compared with 9.5%), despite the fact that more than 90% of participants had a reproductive health visit during the observation period [10].

Although understudied, there are plausible reasons that declining encounters for screening pelvic examinations might impact the delivery of other recommended reproductive health services. For instance, some adolescents might be motivated to seek reproductive health services because of a belief that they need an "annual pelvic" examination. Without a concurrent strategy to enable and encourage adolescents to obtain other annually recommended services (e.g., screening for STI screening or contraceptive services), informing them that they no longer need yearly pelvic examinations could result in a reduction or delay in the delivery of these other services. Adolescents in particular may be vulnerable to these changes because they are already infrequent users of preventive health services [11]. Furthermore, adolescents might be less inclined to use specialized women's health providers if they do not need a pelvic examination resulting in fewer visits to providers most likely to provide comprehensive contraceptive services and STI screening [12,13].

Our objective was to determine whether the relationship between pelvic examinations and contraception method use among female adolescents had changed after the release of guidelines (2009) [1,3] and recommendations that should decrease the frequency of screening pelvic examinations in this population. To accomplish this objective, we characterized the association between pelvic examination and contraceptive method use within two time periods in the 2006–2010 National Survey of Family Growth (NSFG).

Methods

Data

This project received exempt status from the University of Michigan Institutional Review Board. We used 2006–2010 NSFG data, a continuous, nationally representative survey of reproductive health behaviors and outcomes administered by the National Center for Health Statistics. This population-based survey collects data on family life, pregnancy, use of contraception, and women's health [14]. Responses were collected via in-person household interviews from 12,279 noninstitutionalized women aged 15–44 years. Blacks and Hispanics were oversampled. Respondents were assigned a survey weight based on age, race, and ethnicity, and accounting for unequal probabilities of selection into the NSFG sample, allowing estimates to be representative of the U.S. population of women aged 15–44 years. The response rate for 2006–2010 was 78%. Further information about the methodology used can be found at http://www.cdc.gov/nchs/data/nsfg/NSFG_2006-2010_UserGuide_MainText.pdf.

We focused our analysis on the subpopulation of postmenarchal adolescent (aged 15–20 years) female participants at risk for an unintended pregnancy. We defined "at risk" as ever having had sexual intercourse with a male partner, not currently or attempting to become pregnant, and not surgically sterile. Our analytic subsample consisted of 1,208 adolescent females, but the entire sample was processed for variance estimation purposes [15].

Our main exposure was defined as receipt of either a pelvic examination and/or a Pap smear in the past 12 months. We initially planned to examine the receipt of pelvic examination and receipt of Pap smear distinctly; however, during exploratory analysis, we suspected that respondents may not accurately distinguish between these two services. Because neither a screening pelvic examination or Pap smear is required in this age group, we combined these services and defined our main exposure as the receipt of either a pelvic examination OR pap smear in the past 12 months (Yes/No). (Subsequently, we refer to this measure as "pelvic/Pap".) Participants were characterized as exposed if they answered "Yes" to either or both of the following questions: "In the past 12 months, have you received a Pap smear?" and "In the past 12 months, have you received a pelvic exam?"

Our primary outcome of interest was the current use of an effective or highly effective method of contraception. Initially, we grouped contraceptive methods into the following four major categories: highly effective methods (tubal ligations, intrauterine contraception, implants), effective methods (contraceptive pills, Depo-Provera, patches, ring), other methods (barrier methods, withdrawal, periodic abstinence), and no method. Respondents who reported using more than one contraceptive method were categorized based on the most effective method reported. We conducted exploratory analysis using this categorical variable. Because the use of "highly effective" methods was uncommon (<4%), we used current use of effective or highly effective methods (Yes/No) as our outcome in the final models.

Statistical analysis

First, we analyzed the association between receipt of pelvic/Pap and effective contraceptive use among the entire sample of adolescents from 2006 to 2010. We used design-based descriptive and bivariate analyses (unweighted frequencies, weighted estimation of means and proportions; design-adjusted Rao-Scott chi-square tests and t tests) to describe demographic, social, reproductive history, and health service use characteristics among all individuals in the target population and by pelvic/Pap status.

Next, we used logistic regression to estimate the relationship of receiving pelvic/Pap with the odds of using effective or highly