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## Factors Associated with Interest in Same-Day Contraception Initiation Among Females in the Pediatric Emergency Department

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### Abstract

**Purpose**—The purpose was to describe interest in hormonal contraception initiation among female adolescent in the emergency department and to assess for associations with factors known to increase pregnancy risk such as violence victimization.

**Methods**—We used a computerized survey to assess sexual and dating practices, pregnancy history/likelihood, contraception use (including long acting reversible contraception [LARC]) and concerns, contraception initiation interest, violence victimization, medical utilization, and demographics among sexually-experienced females aged 14–19 years in our ED. The primary outcome was interest in contraception initiation. We compared responses between subgroups using the Chi-square test.

**Results**—168 adolescents participated (82% of approached; mean age 16.6 years; 41% White, 48% Black; 21% commercial insurance). Interest in contraception initiation was high: 60% overall and 70% among those not using hormonal contraception (n=96). Among those using non-LARC contraception (n=59), 29% were interested in LARC initiation. Contraception/LARC interest was positively associated with lack of recent well care ( $p < .06$ ), and concerns about cost ( $p < .01$ ), privacy ( $p=0.03$ ), and where to obtain contraception ( $p<0.01$ ). Nearly all planned on avoiding pregnancy, though many (23%) used no contraception at last intercourse. One-third (36%)

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reported violence victimization. Most (70%) reported 1 concern about contraception (most commonly cost).

**Conclusions**—Many reported behaviors and exposures, including violence victimization, that increase their risk for pregnancy and most expressed interest in same day initiation of hormonal contraception, including LARC. These findings may inform novel strategies for increased adolescent access to contraception and pregnancy prevention through use of non-traditional sites such as EDs.

## Keywords

Adolescent; Contraception behavior; Health planning; Prevention and control

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Though highly preventable, unintended pregnancy among adolescents remains a significant public health problem in the United States, where at least 80% of adolescent pregnancies are unintended.<sup>1,2</sup> Despite recent declines in the overall U.S. birth rate, the rate among adolescents remains one of the highest among other industrialized countries.<sup>3</sup>

Recent studies demonstrate unintended pregnancy risk is high among adolescents in the emergency department (ED) population.<sup>4–5</sup> Many adolescents cared for in EDs report patient- and system-level factors associated with increased pregnancy risk including early initiation of sexual activity, infrequent or inconsistent contraception use, violence victimization and lack of access to regular care.<sup>6–8</sup> Previous adolescent relationship abuse (ARA) victimization among female adolescents in the pediatric ED is common<sup>9–11</sup> and those reporting ARA are more likely to be sexually experienced and less likely to have used condoms, compared to females without ARA history.<sup>6</sup>

For several million high-risk adolescents, the ED is their only or primary contact with health care.<sup>12,13</sup> Thus, the ED is an important non-traditional setting for targeted pregnancy prevention interventions and there is growing support to use the ED to improve adolescent sexual health outcomes, specifically increasing access to contraception.<sup>11,14–17</sup> Further, ED-based interventions targeting sexual health and pregnancy prevention are highly acceptable among adolescent ED users and their parents.<sup>3,8, 18–19</sup>

The ED has been used successfully to target some aspects of adolescent sexual health, but most efforts have focused on testing for STIs/HIV<sup>20–23</sup> and information is lacking about potential contraception uptake among adolescents in this setting. In this work, we sought to assess interest in same day initiation of a hormonal contraceptive method (including long-acting reversible contraception [LARC]) and describe factors associated with interest in contraception initiation. We hypothesized that interest in contraception initiation would be more likely among those who reported ARA victimization.

## METHODS

We conducted a cross-sectional survey of adolescents in the ED from a Midwestern children's hospital system. The urban ED is a level one trauma center and has approximately 70,000 annual visits. The patients are primarily non-White (67%) with public or no

insurance (71%). The hospital Institutional Review Board approved this study and waived the requirements for parental and written informed consent.

**Subject Enrollment**—We included female patients if they were seeking care for any reason, reported previous sexual activity, and were aged 14–19 years. Because the initiations of various types of sex (e.g., oral, vaginal) appear to occur closely together we included adolescents who reported oral, vaginal, and/or anal sex.<sup>24</sup> Subjects were excluded if they did not speak English, had significant impairment that would impede participation as determined by the ED provider (e.g., severe illness, developmental delay, intoxication), had complaints involving sexual assault or psychiatric issues, had previously completed the survey, or were wards of the state. We obtained a convenience sample across a wide range of hours (generally 8:00am–12:00pm each day), based upon research assistant (RA) availability to recruit.

Trained RAs identified potential subjects through computerized tracking boards, which log visit information in real time, then asked the treating ED provider about suitability for recruitment. The RA obtained verbal consent/assent from willing adolescents and the participant completed a self-administered computerized survey while the adolescent and RA were alone in a private room. One of the first questions assessed for previous sexual activity; those who reported no previous activity exited the survey at that point.

**Survey Tool**—A multidisciplinary team developed the assessment tool, based in large part on national surveys as well as review of the pertinent literature. The survey included questions on demographic factors (4),<sup>25</sup> use of medical care (4),<sup>26</sup> sexual and dating practices (9),<sup>25,27</sup> pregnancy likelihood and intentions (3),<sup>28–29</sup> pregnancy history and contraception use (5),<sup>27</sup> concerns about contraception initiation (7),<sup>30</sup> interest in contraception initiation (4), and violence victimization [adolescent relationship abuse (5),<sup>9,31</sup> reproductive coercion (10)<sup>32</sup>, and forcible rape (1)<sup>25</sup>]. Medical insurance type (dichotomized into commercial vs. other) and previous ED or primary care hospital system visits in the previous 12 months (dichotomized into none vs. any) were determined by medical record review during the visit; all other responses were self-reported. We pilot-tested this survey with 10 adolescents for ease of use; no significant issues were identified with the final version which took about 15 minutes to complete.

**Adolescent relationship abuse**—We assessed for sexual and physical abuse with 5 questions extensively tested with adolescents, including in the pediatric ED setting (Table 1).<sup>9,31</sup> Subjects with a positive response to any one question were defined as having experienced ARA. We also assessed for recent exposure to ARA (“Has this happened in the last three months?”).

**Reproductive coercion**—We assessed for reproductive coercion using 10 items from an assessment previously developed by one of the investigators.<sup>32</sup> These items collectively assessed for pregnancy coercion (e.g., “Has someone you were dating or going out with ever said he would leave you if you didn’t get pregnant?”) and birth control sabotage (e.g. “Has someone you were dating or going out with ever made you have sex without a condom so

you would get pregnant?”) Subjects with a single positive response to any item were defined as having experienced reproductive coercion. We also assessed for recent reproductive coercion (“Has this happened in the last three months?”).

**Forcible rape**—We used a single question to assess for any forcible rape by someone the participant was not dating (“yes/no” response).<sup>25</sup>

**Concerns about contraception initiation**—Questions to assess for concerns were adapted from similar work with adolescent females in the ED setting<sup>33</sup> (e.g., “When you think about starting a prescription birth control method, how worried are you about the following things...?”). Responses were dichotomized into “very/somewhat” and “not at all” worried.

**Interest in contraception initiation**—We provided brief descriptions of four hormonal contraceptive methods (i.e., pill/patch/ring, injectable, implant, and IUD). After each description, participants indicated interest in same day contraception initiation using a 5-point Likert scale (strongly agree to strongly disagree) (e.g., “How much do you agree or disagree with the following statement: If there were no hassles for you at all (meaning it could be done right now, it would be free and private) I would be interested in getting [insert method] today during an ER visit like this?”). These items were written by study authors and content experts (RB, EM) utilizing relevant literature.<sup>33–34</sup> Responses were dichotomized into “strongly agree/agree” and “neither agree or disagree/strongly disagree/disagree”.

## Analysis

Demographic characteristics, health behaviors, victimization prevalence (e.g., ARA, reproductive coercion, and forcible rape), and concerns about contraception initiation were summarized by standard descriptive means. The primary measurement of interest was the proportion of participants who reported interest in same day initiation of hormonal contraception. We used the Chi-square test to compare responses between subgroups (e.g., current contraceptive use). We used SPSS Statistics 18.0 (SPSS Inc, Chicago, IL, USA) for all analyses.

**Sample Size**—A sample size of 170 females (of whom 30% reported ARA<sup>9–11</sup>) provided 80% power to detect a difference between an ARA-positive group proportion of 65% and an ARA-negative group proportion of 40%, based on a two group Chi-square test and a two-sided significance level of 0.05.

## RESULTS

Subjects were enrolled from July 1–December 17, 2014. Among 484 adolescents approached, 393 (82%) agreed to complete the screening survey to assess for previous sexual activity. Of these, 171 (44%) were eligible and 171 (100%) agreed to complete the full survey. Three of these participants were omitted from analysis (one did not complete the survey and two later denied previous sexual activity), leaving a sample of 168 females. Lack of interest (n=37) and acute illness/not feeling well/tired (n=29) were the most common reasons for refusal. For 13 patients approached, the parent/s refused to leave the room and

these youth were excluded. Compared with participants, no race or age differences were observed among patients who refused to participate. Participant characteristics and current hormonal contraception use (and associations with use) are described in Table 2. The age distribution varied: 22% of respondents were aged 14–15 years, 55% were 16–17 years, and 24% were 18–19 years.

### Sexual Health Behaviors

Nearly all (91%) had dated someone in the past and many (69%) were currently dating someone. Nearly all (95%) did not plan on becoming pregnant within the next year. Participants reported varied previous sexual experiences: 71% had oral sex, 91% had vaginal sex, 19% had anal sex. Among those reporting previous vaginal/anal intercourse (n=153), 58% used a condom at last intercourse, 23% used no contraception, 84% reported sex with males only and 14% reported sex with both males and females. Most (75%) had sex in the previous 3 months (Table 3). Three participants were currently pregnant, and 11 thought they might be pregnant. One in 10 participants reported their last vaginal intercourse was 5 days ago; among these, 9 (53%) used “no method” or “withdrawal” to prevent pregnancy.

### Prevalence of Victimization

Sixty-one participants (36%) reported victimization of any type. Of these, 43% reported more than one type of victimization including 11 participants who had experienced ARA, reproductive coercion, and forcible rape.

**Adolescent relationship abuse (ARA)**—Among all participants, nearly 1 in 3 (29%) reported previous ARA including: physical abuse (17%, three reported within past three months), having unwanted sex due to feeling like you didn’t have a choice (15%, two within past three months), use of force or threats by dating partner to have sex (9%, five within the past three months), feeling unsafe in their current relationship (1%), and feeling unsafe now from a previous partner (7%).

**Reproductive coercion**—About 1 in 10 (11%) reported previous reproductive coercion. Most of this group (n=11) had only one positive response among these specific questions (mean was 1.68; range was 1–4). Participants most commonly responded their partner had: “tried to force or pressure you to become pregnant” (4%), “taken off the condom while you were having sex” (4%), and “told you not to use any birth control” (4%).

### Concerns about Contraception Initiation and Current Contraception Use

Most participants (70%) reported 1 concern about starting contraception; cost of contraception was the most common concern (Table 4). Not quite half (43%) were currently using hormonal contraception, including the pill/patch/ring (n=35), injectable (n=24), and LARC (n=13, including 1 IUD).

### Interest in Contraception Initiation

Among all participants, 66% were interested in same day initiation of some type of hormonal contraception. Among those not currently using any hormonal contraception (n=96), most (70%) were interested in some form of hormonal contraception initiation

including pill/patch/ring (n=58), injectables (n=37), implants (n=27), and IUD (n=29). Among those currently using non-LARC hormonal contraception (n=59), 29% were interested in LARC initiation including implants (n=17) and IUD (n=19).

### Factors Associated with Interest in Any Hormonal Contraception Initiation

Compared to those “not at all” worried about cost, participants who were “somewhat/very” worried were more likely to be interested in LARC initiation (54% vs. 80%,  $p < .01$ ). Compared to those with a health exam in the previous 12 months, participants without a recent exam were more likely to be interested in contraception initiation (59% vs. 73%,  $p < .06$ ). Previous ARA or reproductive coercion, insurance type, previous adolescent clinic/ED Visit, and level of concern about boyfriend’s opinion, doctor’s opinion, where to obtain birth control, privacy, and transportation were not associated with interest in hormonal contraception initiation.

### Factors Associated with LARC Initiation

Compared to those “not at all” worried, participants who were “somewhat/very” worried about where to obtain birth control (39% vs. 61%,  $p < 0.01$ ) and privacy (37% vs. 54%,  $p = 0.03$ ) were more likely to be interested in LARC initiation. Higher levels of worry about cost (37% vs. 51%,  $p = 0.08$ ) and that “my mom wouldn’t want me to use” (38% vs. 54%,  $p = 0.07$ ) approached statistically significant association. Previous ARA or reproductive coercion, insurance type, previous adolescent clinic/ED, check-up within past 12 months, and level of concern about boyfriend’s opinion, doctor’s opinion, and transportation were not associated with interest in LARC initiation.

## DISCUSSION

Most (60%) sexually experienced adolescent females presenting for care to this pediatric ED were interested in same day initiation of some type of hormonal contraception. Among those currently using non-LARC hormonal contraception, 29% were interested in initiating LARC during that visit. Lack of recent well care and concerns about cost, privacy, and where to obtain contraception were associated with contraception initiation interest. Our study found a much higher level of interest in LARC compared with the proportion of respondents who actually were using LARC, supporting the novel concept that pediatric EDs may be able to play an important role in increasing access to effective contraception, including LARC, for this vulnerable population.

Similar to other studies,<sup>4,6</sup> our work demonstrates that many adolescent females treated in EDs are at high risk for pregnancy and highlights an opportunity to provide essential reproductive care in a non-traditional setting. However, provider- and systems-level barriers to care exist including lack of expertise or interest, time constraints, and unique reimbursement requirements.<sup>18, 35</sup> And while the ED has been used successfully to target some aspects of adolescent sexual health, most efforts have focused only on testing for STIs/HIV.<sup>20–23</sup> A few recent efforts to increase access to reproductive care have had mixed results.<sup>36–37</sup> Thus, further efforts are warranted to explore and fully take advantage of this unique opportunity for significant public health benefit.

Given that adolescent access to publicly-funded clinics in the Midwest is poor, with 20% of youth in need receiving care at these sites<sup>38</sup>, it is understandable that females who were worried about cost and where to obtain services were more likely to be interested in ED-based contraception. Compared to those with recent health visits, females without recent visits were more likely to be interested in contraception initiation. This highlights the ED visit as an opportunity to identify these patients and connect them to a confidential, low-cost or free clinic to fulfill both recurring contraceptive needs (e.g., injections) as well as comprehensive sexual health needs (e.g., vaccination against Human Papillomavirus Virus).

While not associated with interest in contraception initiation, violence victimization was common among these ED users. Our findings are consistent with prior studies demonstrating prevalence rates of ARA victimization in ED settings from 36–55%.<sup>9–11</sup> ARA has been associated with a number of behaviors that increase pregnancy risk, including inconsistent condom use, earlier sexual debut, and consuming substances while engaging in sexual behavior. Additionally, we provide the first detailed assessment of reproductive coercion prevalence (11%) in a novel population (i.e., younger age overall, ED setting) which is similar to reproductive coercion prevalence (6–19%) reported in recent studies of adolescent and young adult females in different clinical settings.<sup>33,39</sup> Our findings, including the high prevalence of forcible rape, highlight the need to expand our understanding of pregnancy risk factors and contraceptive decision making to include circumstances not under women's control. Additionally, any ED-based interventions for reproductive and sexual health should include information and resources about ARA, reproductive coercion, and sexual assault.

### Limitations

Our study has several limitations. Nearly 20% of patients declined participation, and it is possible that non-participants or those presenting during non-recruitment times were different from participants. While the reliance on self-report of sexual and ARA experiences may introduce biases in assessment, utilizing computerized surveys to collect sensitive information improves data collection and reliability of self-reports.<sup>40</sup> Also, participants were recruited from a single urban pediatric ED which primarily serves patients from low income communities of color; thus, findings may not generalize to adolescent females with different geographic or socioeconomic backgrounds. Another limitation is the evaluation of intent, which may be different from actual behavior.

### Conclusions

Adolescent females who visit the ED frequently report health behaviors and exposures that place them at elevated risk for unintended pregnancy and most expressed interest in same day initiation of hormonal contraception, including LARC. Because of the high prevalence of risky health behaviors and exposures such as violence victimization, these findings support the need for more ED-based initiatives to prevent pregnancy. Practitioners should receive guidance on identifying and counseling regarding these behaviors and providing expeditious connections to comprehensive care.

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### **Implications and Contribution**

Many adolescent females in this ED are at-risk for unintended pregnancy. Most (60%) were interested in initiation of hormonal contraception. Contraception interest was associated with lack of recent well care and concerns about cost, privacy, and where to obtain contraception. These findings can inform ED initiatives to prevent pregnancy.

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**Table 1**

Questions used to screen for adolescent relationship abuse (answered “yes” or “no”).

<b>The next questions ask about things that may have happened to you while you were dating someone:</b>	
1	Do you feel unsafe in your current relationship?
2	Is there someone you used to date who is making you feel unsafe now?
3	Has someone you were going out with or hooking up with ever hit, pushed, slapped, choked or otherwise physically hurt you? (Include such things as being hit, slammed into something, or injured with an object or weapon.)
4	Has someone you were dating ever used force or threats to make you have sex (vaginal, oral, or anal sex) when you didn't want to?
5	Have you ever had sex with someone you were dating when you didn't want to, because you felt like you didn't have a choice, even though they did not use physical force or threats?

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**Table 2**

Characteristics of participants currently using hormonal contraception and those not currently using hormonal contraception (N=168)

	N (%) <sup>#</sup>	Current hormonal contraception (n=72)	No current hormonal contraception (N=96)	p value
Mean age in years with SD	16.6 ± 1.3	16.8 ± 1.3	16.4 ± 1.3	
Race				
White	63 (41)	33 (45)	30 (31)	.340
Black	75 (48)	31 (43)	44 (46)	.340
Other/Mixed	17 (11)	7 (10)	10 (10)	.340
Hispanic Ethnicity*	26 (16)	5 (7)	21 (22)	.008
Commercial Insurance	36 (21)	19 (26)	17 (18)	.175
Dating someone right now	115 (69)	51 (71)	64 (67)	.476
Ever pregnant	16 (10)	8 (11)	8 (9)	.592
Trying to avoid pregnancy*	118 (70)	57 (79)	63 (64)	.069
General check-up within 12 months*	93 (55)	47 (65)	46 (48)	.050
Ever tested for STD*	91 (55)	47 (65)	44 (47)	.018
Ever received prescription contraception*	107 (65)	70 (97)	37 (39)	.000
Adolescent clinic visit (previous 12 months) *	65 (39)	40 (56)	25 (26)	.000
ED visit (previous 12 months)	87 (52)	40 (56)	47 (49)	.397
Enrolled in school	142 (86)	62 (87)	80 (84)	.573
Any previous adolescent relationship abuse	48 (29)	21 (29)	27 (28)	.825
Any previous reproductive coercion	19 (11)	11 (15)	8 (8)	.160
Any previous forcible rape	30 (18)	15 (21)	15 (16)	.383

<sup>#</sup>Denominator includes those who provided response

**Table 3**

Contraception method(s) at last intercourse used by nonpregnant females who were sexually active in the past 3 months (N =115)

Method	n (%)
No method	28 (24)
Not sure/Other	4 (3)
Withdrawal	5 (4)
Condom	35 (30)
Pill	6 (5)
Ring	1 (<1)
Shot	8 (7)
Implant	4 (3)
OCP and condom	11 (10)
OCP and withdrawal	1 (<1)
Depo and withdrawal	1 (<1)
Condom and vaginal ring	1 (<1)
Condom and transdermal patch	1 (<1)
Condom and Depo	5 (4)
Condom and implant	3 (3)
Condom and withdrawal	1 (<1)

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**Table 4**

Concerns about contraception initiation (participants answering “very” or “somewhat” worried).

<b>When you think about starting a prescription birth control method, how worried are you about the following things:</b>	<b>N%</b>
Cost	75 (45)
Privacy or that someone could find out I used it	60 (36)
My mother wouldn't want me to use it	49 (29)
Knowing where to get it	47 (28)
Transportation or getting to my doctor or clinic	45 (27)
My doctor wouldn't want me to use it	29 (19)
My boyfriend wouldn't want me to use it	22 (13)

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