

Title: Transitions onto and off of hormonal methods among teens and young adults in the U.S.

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Background

Teens and young adults in the U.S. have high rates of unintended pregnancy and childbearing. Use of consistent and effective methods of contraception – particularly hormonal contraceptive methods (the Pill, patch, ring, injectables, IUDs and implants) – can help reduce these high rates. However, although many teens and young adults report that they have ever used a hormonal method, many subsequently transition off of these methods at a later point in times. For example recent analyses of the 2006-2010 National Survey of Family Growth found that 80 percent of women aged 15-24 had ever used hormonal methods, but only 46 percent were currently using a hormonal method at last sex. A better understanding of family, individual and relationship-level factors associated with hormonal method use and the continuation of hormonal method use over time can help improve program and policy approaches to increasing the use of more effective contraceptive methods for pregnancy prevention.

The goal of this paper is to assess patterns of hormonal contraceptive use among young adults. We describe the percentage of sexually active teens and young adults who have ever used hormonal methods, and among those who ever used one of these methods, the percentage who subsequently stopped using hormonal methods at some point (while currently sexually active). We describe the percentage of hormonal method users who use long-acting reversible contraceptive methods (LARCs), including IUDs and implants. We incorporate an ecological approach to assess how factors in multiple domains are associated with transitioning onto using hormonal methods for the first time, as well as with transitioning away from hormonal method use. Key factors of interest include family background (including family structure and parental education), individual characteristics (age, race/ethnicity, educational attainment and enrollment, age at menarche, age at first sex) and characteristics of first and subsequent relationships (relationship status, partner age difference, partner different race/ethnicity, number of sexual partners, contraceptive use). We will also examine whether the duration of previous hormonal method use, the type of hormonal method used (e.g., the Pill vs. injectables or LARCs), or transitions in the types of hormonal methods (e.g., from birth control pills to LARCs) are associated with greater consistency of hormonal method use.

Data/Sample/Methods

We used data from the National Longitudinal Survey of Youth, 1997 cohort (NLSY97), to examine transitions onto and off of hormonal methods. The NLSY97 is a nationally-representative sample of 8,984 youth aged 12-16 at baseline who were followed annually. These data, sponsored by the Bureau of Labor Statistics, provide valuable information on individual, family and relationship characteristics, as well as annual information on sexual activity and contraceptive method use and consistency. We restricted our sample to 2,921 unmarried women who never used hormonal methods by Round 3 of the survey (1999, when adolescents were ages 14-18), were unmarried during that round, and were sexually active in the past year. We converted our sample to person-year data for each round of information available between 1999 (Round 3) and 2009 (Round 13).

We created two dependent variables. The first measures the first year in which a women first used a hormonal method, including the Pill, patch or ring, injectables, IUD (including both hormonal and

non-hormonal IUDs) and implants/Norplant. The second dependent variable measures, among person-months in which women were using hormonal methods, the first year in which they no longer used a hormonal method. Women were censored at the time that they first transitioned onto (or off of) hormonal methods.

Our methods included bivariate life-table analyses and multivariate discrete-time event history analyses to assess factors associated with transitioning onto and off of hormonal methods. To date, we have created most (but not all) of our variables and have run a first set of preliminary multivariate analyses, presented below. We ran two models for each outcome – Model 1 included family, individual characteristics, as well as characteristics of first sexual relationships. Model 2 also added recent partners, cohabitation status and birth history, and contraceptive method histories.

We plan additional variable creation and analyses (discussed below), including age-specific analyses, as well as running Latent Class Growth Models that will better describe differences in contraceptive method use over time.

Sample characteristics

Three in four women in our sample (76 percent) transitioned to hormonal methods at some point during the study. Of these women who ever began using hormonal methods, 56 percent switched to a less effective method or no method at some point. Eight percent of women who relied on hormonal methods used long-acting reversible contraceptive methods, including IUDs and implants at some point. An additional 23 percent used injectables, such as Depo.

Table 1 includes our overall sample of person-years (column 1), as well as the sample of person years for analyses of transitions onto hormonal methods (that is, person-years for those who were sexually active and not using hormonal methods) and of transitions off of hormonal methods (person-years for women using hormonal methods). Our average sample age is aged 22 years for the full sample and 20.5-20.6 for the sample of women for analyses of transitions onto and off of hormonal methods, respectively. Between two-thirds and three-quarters of our sample is white (including a higher percentage in the analyses of transitioning off of hormonal methods), about half grew up with two biological parents, and they had first sexual intercourse, on average, at age 16.5. For relationship and partner factors, about two-thirds are in a steady relationship at first sex, one in five has a partner of a different race/ethnicity, and women in our sample have partners who are about two years older than them, on average. Between 20 and 24 percent have a child during the study period. Educational attainment and cohabitation status differ by sample – with higher educational attainment and a greater likelihood of cohabiting in the sample of women at risk of transitioning off of hormonal methods than in the sample of women who had never used hormonal methods.

Multivariate results

Preliminary discrete time event history analyses indicated that family, individual and relationship characteristics are associated with transitioning onto hormonal methods.

Transitions onto hormonal methods. In Model 1, growing up with one biological and one step parent was associated with greater odds of transitioning onto hormonal methods, relative to growing up with two biological parents. For individual characteristics, higher self-reported grades (measured in 8th grade), attending some college or more and a later age at menarche were associated with greater odds

of transitioning onto hormonal methods, while an older age and black race/ethnicity were associated with lower odds. For sexual relationship characteristics, a later age at first sex was associated with greater odds of transitioning onto hormonal methods, while having a more casual first sexual partner (described as “just met or just friends” at the time of first sex) and having a partner of a different race ethnicity were associated with reduced odds.

In Model 2, a higher number of sexual partners (a time-varying measure) was associated with reduced odds of transitioning onto hormonal methods, as was using any type of non-hormonal birth control in the previous year. Having had a child and more consistent non-hormonal method use were associated with greater odds of transitioning onto hormonal methods. Adding the variables in model 2 attenuated the association between growing up in a biological/step-parent family, having a casual first sexual relationship, having a partner of a different race/ethnicity and transitioning onto hormonal methods.

Transitions off of hormonal methods. In Model 1, higher grades in school, attending some college or higher educational attainment and being employed or enrolled were all associated with reduced odds of transitioning off of hormonal methods. In contrast, black and U.S.-born Hispanics had increased odds, compared with whites. In addition, having a casual first sexual relationship, and having a partner of a different race/ethnicity were associated with greater odds of transitioning off of hormonal methods, compared with other relationship types.

In Model 2, the duration of hormonal method use (in years) was associated with reduced odds of transitioning off of hormonal methods in a subsequent year, while having a greater number of sexual partners was associated with elevated odds. In general, factors associated with greater odds of transitioning onto hormonal methods were also associated with reduced odds of transitioning off of these methods, with one exception. Having had a baby was associated with significantly increased odds of transitioning onto and off of hormonal methods. This may be because we have not included any measures of pregnancy intentions (which are available only for a subset of our sample who were in current dating relationships). We plan to further refine our models to take into account potential intentions as one of our next steps.

Summary/Next Steps

Our analyses suggest that higher educational engagement and performance are associated with greater odds of transitioning onto and continuing to stay on hormonal methods over time, which supports youth development approaches to pregnancy prevention. These approaches often focus on improving educational outcomes and developing work and educational aspirations, as well as the prevention of risky sexual behaviors. Our analyses also suggest that adolescents and young adults of black and U.S.-born Hispanic race/ethnicity have reduced odds of hormonal method use and/or staying on hormonal methods, which supports some research suggesting greater concerns about side effects among racial and ethnic minorities, as well as reduced access to and affordability of hormonal methods of contraception.

As anticipated, relationship and partner factors were associated with hormonal method use (or transitioning off of hormonal methods). In particular, having more casual relationships, having a greater number of sexual relationships and having a partner of a different race/ethnicity (which is linked to relationship instability) were all associated with reduced odds of transitioning onto and continuing on hormonal methods. These findings support a Sawtooth hypothesis, which notes that more casual and

less stable relationships are linked to reliance on non-hormonal methods – particularly condoms. In future analyses, we will also include time-varying characteristics of most recent sexual partners in order to have more proximate measures of partner characteristics.

In future analyses, we hypothesize that the *type* of hormonal method will be associated with the odds of transitioning off of (or staying on) hormonal methods. In particular, we are coding variables to differentiate women who rely on the pill, patch or ring, compared with those who use injectables or those who use LARCs. Future analyses will include method type, as well as whether women switched their type of hormonal method (e.g., from pills to LARCs). Our future analyses will also better assess pregnancy intentions among sample members and we will run separate models by age (comparing transitions during the teen vs. young adult years).

Finally, because we have up to 10 years of information on hormonal method use, we plan to run Latent Class Growth Models to better understand the patterns of hormonal and non-hormonal method use over time. Specifically, we plan to run these latent class analyses with multinomial probabilities of a categorical outcome (not sexually experienced, used no method, used a non-hormonal method, used a hormonal method). We will also consider differentiating among hormonal methods to compare those using the pill/patch/ring compared with those using injectables, IUD or patch.

These analyses will help provide a better understanding of women's experiences with transitioning onto and off of hormonal methods and may have implications for program and policy approaches to encouraging more effective method use and reducing high rates of unintended pregnancy and childbearing among teens and young adults.

Table 1: Weighted means and proportions for full sample (n=14,375 person-rounds) and each event sample (Transition onto hormonal methods =6,866 person-rounds, Transition off of hormonal=4,690 person-rounds)

	FULL	Sample for transitions onto hormonal methods	Sample for transitions off of hormonal methods
Family measures			
Family structure			
2 bio parents	52%	52%	56%
1 bio and 1 other	14%	13%	15%
1 bio only	30%	32%	26%
Other	4%	4%	3%
Mother teen mom	22%	24%	20%
Individual Characteristics			
8th grade grades	7.6	7.3	8.1
Educational attainment			
None	17%	27%	8%
high school degree or equiv	30%	35%	25%
some college	36%	30%	43%
bachelor's degree or more	17%	8%	25%
Enrolled in school	39%	45%	39%
Employed	92%	90%	94%
Age	22.0	20.6	22.5
Race/ethnicity			
White	68%	64%	74%
Black	19%	21%	14%
Hispanic	12%	13%	10%
Other	2%	2%	1%
Foreign-born	4%	5%	3%
Age at menarche	12.2	12.1	12.3
First Sexual Partner			
Age at first sex	16.5	16.6	16.7
Relationship status at first sex			
Steady	68%	67%	72%
just met, just friends, other	21%	22%	18%
went out once in awhile	8%	8%	7%
engaged, cohab, married	3%	3%	3%
First partner a different race/ethnicity	22%	23%	18%
First partner age difference (in years)	1.9	2.0	1.7
Recent Partners			
Number of partners in past year	1.8	1.9	1.7
Cohabitation/Parenthood			
Cohabiting	26%	18%	30%
Any biological children	24%	20%	21%
Contraceptive methods			
Any birth control used at first sex	78%	75%	82%
Any birth control used in past year	49%	39%	62%
Frequency of birth control	53.0	39.9	62.2
Type of hormonal method used			
pills/patch	82%	--	69%
iud/norplant	4%	--	8%
depo/injectables	14%	--	23%
Hormonal method switch indicator	4%	--	5%
Duration of hormonal use (in years)	1.6	--	2.7

Table 2. Weighted discrete-time logistic regression models of the transition onto a hormonal method (n=6,866 person-rounds)

	M1	M2
Family measures		
Family structure (ref: 2 bio parents)		
1 bio and 1 other	1.30*	1.27
1 bio only	1.05	1.11
other	1.19	1.20
Mother teen mom	1.08	1.03
Individual Characteristics		
8th grade grades	1.09***	1.12***
Some college or more	1.22*	1.27*
Enrolled or employed	0.96	1.09
Age	0.90***	0.82***
Race/ethnicity (ref: white/other)		
black	0.75***	0.80*
U.S-born Hispanic	0.86	0.84
Foreign-born Hispanic	0.72	1.04
Age at menarche	1.07**	1.09**
First Sexual Partner		
Age at first sex	1.06***	1.10***
Relationship status at first sex (ref: steady)		
just met, just friends, other	0.84*	0.91
went out once in awhile	0.83	0.76
engaged, cohab, married	0.97	0.99
First partner a different race	0.79**	0.84
First partner age difference (continuous)	1.00	1.02
Recent Partners		
Number of partners in past year		0.92**
Cohabitation/Parenthood		
Cohabiting		1.02
Any biological children		1.85***
Contraceptive methods		
Any birth control used in past year		0.74*
Frequency of birth control		1.01***
Psuedo R2	0.0338	0.0672
Wald	176.07***	192.66***
DF	18	23
Observations	5,793	3,632

*** p<0.001, ** p<0.01, * p<0.05

Table 3. Weighted discrete-time logistic regression models for the transition off a hormonal method (n=4,690 person-rounds)

	M2	M5
Family measures		
Family structure (ref: 2 bio parents)		
1 bio and 1 other	0.99	0.93
1 bio only	1.10	1.06
other	0.79	0.72
Mother teen mom	1.15	1.09
Individual Characteristics		
8th grade grades	0.90***	0.92***
Some college or more	0.69***	0.75**
Enrolled or employed	0.62**	0.68*
Age	1.01	1.07**
Race/ethnicity (ref: white/other)		
black	1.66***	1.48**
U.S-born Hispanic	1.32*	1.28
Foreign-born Hispanic	1.40	1.14
Age at menarche	0.97	0.97
First Sexual Partner		
Age at first sex	0.97	0.95*
Casual relationship at first sex (vs. steady)	1.27*	1.18
First partner a different race	1.44***	1.32*
First partner age difference (continuous)	1.00	1.00
Recent Partners		
Number of partners in past year		1.12***
Cohabitation/Parenthood		
Cohabiting		0.90
Any biological children		1.52***
Contraceptive methods		
Duration of hormonal use		0.84***
Switched hormonal method		0.75
Psuedo R2	0.051	0.0687
Wald	201.92***	258.75***
DF	16	21
Observations	4,182	4156

*** p<0.001, ** p<0.01, * p<0.05