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Introduction

Teen pregnancy not only a burden to the adolescent, but also on society:

- U.S. teens more likely to become pregnant than in any other industrialized country¹
- 3 out of 10 women become pregnant by age 20¹
- **US teens are not more sexually active, but less likely to use contraception²**
- Teen pregnancies cost the U.S. approximately **ten billion dollars annually³**

Patient cost has been identified as one of the major barriers to teens using the most effective forms of contraception.⁴

The Affordable Care Act (ACA)

- Increased access to insurance
- In 2012 mandated coverage of FDA-approved prescription contraceptives without cost-sharing by the patient⁵
- Theoretically should decrease teen pregnancy rates
- Limited data available to support this relationship

This is the first comprehensive review of the literature to assess the impact of programs that reduce patient contraceptive cost on teen pregnancy rates.

Methods

A comprehensive search of the literature was performed using multiple databases (PubMed, Embase, Scopus, Web of Science, Cochrane, MedNar and Google Scholar), grey literature and citation chaining. Keywords and controlled vocabulary settings were developed with the assistance of a research librarian. This search yielded a total of 594 papers which were screened for relevance by title and abstract. The remaining 70 papers were read in their entirety to assess for eligibility using pre-determined criteria.

Publications were eligible for inclusion if the studied:

- An intervention that reduces contraceptive cost to the patient
- Data was collected within the U.S. after 1990
- Included females aged 19 or younger
- Measured a change in teen pregnancy rate

Papers were excluded if they were not research studies, but expert reviews, opinions or non-systematic narrative reviews.

A data extraction table was used to organize results and data obtained from each article.

Concept	Keyword	MeSH
Financial barrier	Financial OR finances OR monetary OR money OR cost OR fund OR funding OR medicaid OR insurance	"Insurance, Health"[Mesh] OR "Medicaid"[Mesh] OR "Health Benefit Plans, Employee"[Mesh]
Prescription contraception	Contracept* OR "birth control"	"contraception"[majr] OR "Contraception Behavior"[Majr] OR "Contraceptive Agents"[Majr]
pregnancy	Pregnant OR pregnancy OR "birth rate"	"Pregnancy in Adolescence"[majr] OR "pregnancy"[mesh] OR "birth rate"[mesh]
teen	Teen OR adolescent OR "young adult"	"adolescent"[mesh] OR "young adult"[mesh]
Impact	Impact OR barrier OR challenge OR facilitator OR opportunity OR opportunities OR benefit OR effect* OR effectiveness OR reduce OR declin*	"prevention and control" [Subheading]

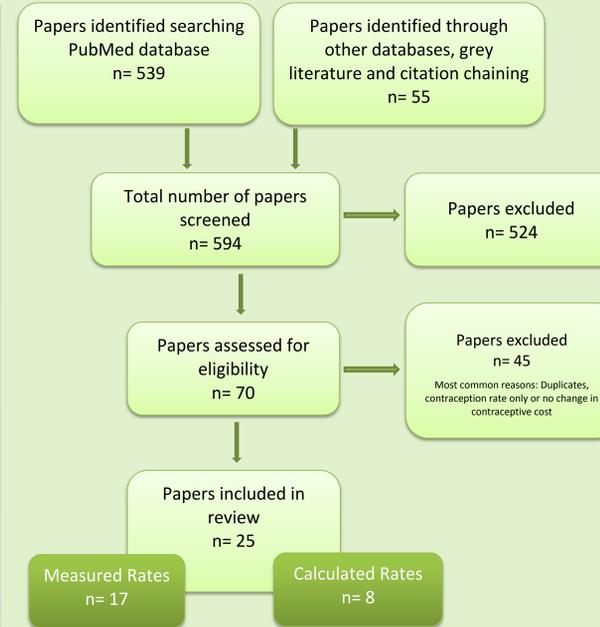
Table 1: Keywords and search terms

Results

Table 2: Data extraction for studies that directly measure a change pregnancy rate, abortion rate or birth rate.

Source	Population	Intervention	Comparison	Contraception Use	Pregnancy Rate
Ayadi et al. 2012	Florida and Georgia teens 15-19 y.o. receiving Medicaid	1999- State Children's Health Insurance Program	1994-1995 vs 2000-2001	Florida: 11.1% to 18.6% Georgia: 22.4% to 27%	Florida: 109/1,000 to 117/1,000 Georgia: 246/1,000 to 180/1,000
Adams, Galactionova and Kenney 2015	Oregon, New York and Illinois PRAMS data and births paid for by Medicaid	Medicaid family planning waivers (1999, 2002 and 2004)	Pre/post (2 years) and comparison states w/o waiver	No statistically significant effect on postpartum contraception	Oregon: Dec <i>unintended</i> Medicaid births by 13% New York: Dec <i>unwanted</i> teen births by 6.7% Illinois: No effect on <i>unintended</i> teen birth rate
Adams, Kenney and Glactionova 2013	California survey and BRFSS age 18-44 below 200% FPL from 1997-2006	Medicaid family planning waiver 1999	Pre/post and those with slightly higher income that are not eligible	12% increase in contraceptive discussions	3% decrease in current pregnancy among nulliparous women
Biggs et al. 2015	Iowa women age 15-44 in 14 family planning clinics	2006 Medicaid expansion and 2007 Iowa Initiative to Reduce Unintended Pregnancies	Pre/post longitudinal study	Program LARC: <1% to 15% vs Iowa LARC: 0.09% to 1.48%	Abortion rate decreased from 8.7/1,000 to 6.7/1,000
Dills and Grecu 2017	National Vital Statistics- women age 15-44 (births conceived 1996-2009)	State-level private insurance mandates prior to 2010	County and year fixed effects and state and county-level controls	Not measured	Birth rate decreased 4% in Hispanic women <19 y.o. Decreased birth rate in unmarried women. Effects on white and black women are small and statistically insignificant.
Graves et al. 2016	Massachusetts women age 15-44 in the Harvard Pilgrim Health Care HMO and HDHP	Employer-mandated switch from HMO to HDHP	Similar HMO group	No significant change in prescription contraceptive rates between groups	Larger decrease in birth rate in HDHP from 57.1/1,000 to 32.7/1,000 compared to HMO from 61.9/1,000 to 56.2/1,000
Johnston and Adams 2017	PRAMS data 1997-2012 for privately insured mothers	State-level private insurance mandates 2000-2008	States without private insurance mandates	Not measured	State mandates decreased unintended birth from 6.4% to 5.3% in privately insured <20yo. However, also a decrease in non-privately insured from 17.7% to 15.0% for same states.
Kearney and Levine 2009	National Vital Statistics, Census Bureau, Guttmacher Institute and CDC	Income and postpartum based Medicaid waivers before 2006	States without waivers	Not measured	Income-based decreased teen birth rate 4.2%. Postpartum-based statistically insignificant.
Kost, Finer and Singh 2012	BRFSS 2004- Women age 18-44	Insurance and Medicaid	Variation in state proportion of uninsured and on Medicaid. No control.	Not measured	Proportion of insurance and Medicaid coverage correlates to decrease in pregnancy rates
Lindrooth and McCullough 2007	National Vital Statistics 1991-2001	Income and postpartum based Medicaid waivers before 2000	Longitudinal trends in state, region and nationally	Not measured	Income-based decreased birth rates significantly in state, regional and national comparisons. Postpartum-based statistically insignificant.
Lindo and Packham 2017	Colorado teens using Title X clinics	Colorado Family Planning Initiative	Other US counties with Title X clinics	CFPI increased LARC rate by 21% vs 6% compared to other Title X counties	CFPI reduced teen birth rate by 6.4% over 5 years compared to other Title X counties
Mulligan 2015	BRFSS, National Vital Statistics, Census Bureau	Employer-based insurance mandates prior to 2010	States without insurance mandates	On a state-level there is an increased rate of contraceptive use	11% decrease in abortion rate and 3% decrease in birth rate for teens.
Packham 2017	Teens in Texas counties with publicly funded family planning clinics from 2005-2014	Decrease in family planning funding in Texas in 2011	Longitudinal trends in publicly funded clinics outside of Texas	Not measured	3.4 - 4.3% increase in teen birth rate
Ricketts 1996	Colorado mothers with first Medicaid-eligible birth in 1991	Colorado Medicaid coverage of contraceptive implant in 1991	Colorado mothers with first Medicaid-eligible birth in 1992	30% of teens in the 1992 cohort chose the implant. No 1991 comparison.	Repeat teen pregnancy in 24 months decreased by 29% between 1991 and 1992 cohorts
Ricketts, Klingler and Schwalberg 2014	Female clients of Title X funded clinics in Colorado	CFPI	Expected longitudinal trends for 2009-2011	LARC use increased from 4.5% to 19.4% and non-barrier increased from 78.6% to 81.3% in 15-24 y.o. CFPI	Observed fertility rates were 15% lower in 2010 and 29% lower in 2011 than expected in 15-19yo
Secura et al 2014	Sexually active St. Louis teens electing contraception	CHOICE Project	US total and sexually active teen pregnancy rates	2009 LARC rate in US 5% vs 71.6% in CHOICE cohort	Teen pregnancy rate 34/1,000 in CHOICE vs 57.4/1,000 US total and 158.5/1,000 US sexually active
Yang and Gaydos 2010	US teens using Vital Statistics and Census Bureau 2009	Medicaid family planning waiver 2000-2006	States without waivers	Not measured	Waivers reduced teen birth rate by 2.1/1,000 per state on average

Figure 1: Flow diagram of paper selection process



Preliminary results provide strong evidence that interventions aimed at reducing patient contraceptive cost, especially for LARCs, lower teen pregnancy rates. Interventions directed at lower-income teens produce a much greater decrease in pregnancy rate than those directed at private insurance coverage of contraception.

Next Steps and Implications

Next steps:

- Evaluate type of analysis performed, determine study quality and bias
- Review programs and policies by intervention- type to determine which had the greatest impact on teen pregnancy rates
- Synthesize results using descriptive qualitative approach

Meta-analysis has been considered, but not possible because of heterogeneity in studies and outcomes measured.

Implications:

Previous research has established that minimizing teen pregnancy rates, improves teen health and socioeconomic status and cuts societal cost. Thus, the United States should create and maintain policies that eliminate contraception costs for teens.

References

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5. Tschann, Mary, and Reni Soon. 2015. "Contraceptive Coverage and the Affordable Care Act." *Obstetrics and Gynecology Clinics of North America* 42 (4): 605–17.
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Discussion

Seventeen papers directly measured outcomes

- **16 showed the intervention contributed to decreased teen pregnancy, abortion or birth rate**
- One measured a decreased pregnancy rate after a change to high deductible health plan

Eight of these papers also measured the impact on contraception rate

- 6 showed an increased rate of contraception
- 2 did not show any significant change

Eight additional papers extrapolated teen pregnancy, abortion or birth rate based on actual or expected changes in contraception rate with policy changes. Data has not yet been completely extracted from these studies.