GAVIN PUBLISHERS

OPEN ACCESS

Reports on Global Health Research

Belcastro PA. Rep Glob Health Res 4: 134.
DOI: 10.29011/2690-9480.100134

Research Article

Divergence in the Fecundation Intent and Pregnancy Outcome Experience of Undergraduate Men

Philip A. Belcastro*

Health Education Department, The City University of New York-BMCC, New York, USA

***Corresponding author:** Philip A. Belcastro, Health Education Department, The City University of New York-BMCC, 199 Chambers Street, New York, NY 10007, USA

Citation: Belcastro PA (2021) Divergence in the Fecundation Intent and Pregnancy Outcome Experience of Undergraduate Men. Rep Glob Health Res 4: 134. DOI: 10.29011/2690-9480.100134

Received Date: 15 June, 2021; **Accepted Date:** 25 June, 2021; **Published Date:** 30 June, 2021

Abstract

The objective of this study was to describe the fecundation intent and pregnancy outcome experience of undergraduate men and women with their sexual partners. Literature describing the paternal and pregnancy outcome intent of undergraduate men is inconsistent and methodologically flawed. Substantiating divergence in the fecundation intent and pregnancy outcome experience of undergraduate men is fundamental to addressing the global health primacy of abating unintended pregnancy. A retrospective cross-sectional survey utilizing a convenience sample was drawn from a United States, metropolitan, public community college. The 1,830 respondents represented 7.6% of the college enrollment. One in six men, and one in four Black men were not notified of their pregnancy. Four in five times a live birth occurred when the man did not intend a live birth and his sexual partner did. One in three times a live birth occurred when the man intended a live birth and his sexual partner did not. Ninety percent of pregnancies were unintended by one or both sexual partners. Undergraduate men were significantly less likely to realize their paternal and pregnancy outcome intent with their sexual partners juxtaposed to undergraduate women with their sexual partners.

Background

An empirical description of the paternal intent (intended or unintended pregnancy) as well as paternal intent for pregnancy outcome (live birth or abortion), is wanting in the literature [1,2]. Howbeit, abating unintended pregnancy has been a United States as well as global health primacy for decades [3]. Research examining unintended pregnancy is often focused on its association to neonatal morbidity and mortality and typically references women [4-6]. The most sourced United States databases for referencing paternal intent relative to paternal pregnancy outcome are The United States National Survey of Family Growth (hereafter NSFG) and the Pregnancy Risk Assessment Monitoring System [7,8].

Databases such as the NSFG in their design, perpetuate the paucity of literature and empirical examination of paternal intent relative to paternal pregnancy outcome. Fecundation and pregnancy outcome intent is commonly interpreted from the perspective of the woman. Men are rarely queried about their paternal and pregnancy outcome intent as an independent group. Men are routinely queried about their paternal and pregnancy outcome intentions paired with their sexual partners. Moreover, investigations of the fecundation and abortion experience of men is predominately limited to samples of fathers who experienced pregnancies within the past five years [5,9,10]. Men who have not experienced a pregnancy in the past five years, men who experienced a terminated pregnancy, and men unaware or never notified of their pregnancy and/or pregnancy outcome are conspicuously absent in the literature as an independent class [11]. Indeed, this class of men represents the preponderance of men who wittingly or unwittingly father a pregnancy. These analytic oversights as well as inferential propositions all but exclude an account of the paternal and pregnancy outcome intent of men. Consequently, there is an empirical bias in the inferential representation of the paternal and pregnancy outcome intent of undergraduate men as well as their fecundation outcome experience.

In turn, the literature relies on conative studies of 'planned' and 'unplanned' pregnancies to depict an experiential account of men's paternal intent in relation to their pregnancy outcome experience [12]. The parochial focus of this databased literature is on birth-control preferences, happiness, depression, perceived social norms, fear of court ordered paternity warrants, and relationship dynamics as metrics of paternal and maternal intent [1,2,11,13-15]. Demographics of race/ethnicity (hereafter ethnicity), age, marital status, cohabitation, and education attainment are the few

variables associated with men's paternal and pregnancy outcome intent [11,16,17]. Subsequently, empirical testing of the paternal intent and desired pregnancy outcome of men, tracked through their experienced pregnancy event—is neglected in the literature.

The limited research cache of paternal and pregnancy outcome intent fixes on a subset of men who experienced a live birth in the past five years. By example, Huang reported that 50% of pregnancies by never-married men and 20% by married men were unwanted [15]. Estimates drawn from NSFG data report 65% of live births to men in the past five years as intended, 25% mistimed and nearly 9% unwanted [18]. Lindberg and Kost sampled men who experienced live births in the last five years and found that 63% of births were intended by the father, 26% were mistimed, and 10% were unwanted—with single men least likely to have intended the pregnancy [11]. In the same study, a significantly greater proportion of Black and Hispanic births among married fathers were unwanted than were births to married White fathers. In addition, 11% of single men were unaware of their pregnancy prior to the birth, and one in four births were born to White fathers unaware of their pregnancy until after the birth, compared to only 5% of births among Black or Hispanic fathers [11]. In a French study, 82% of women and 88% of men within a fiancée/relationship status, reported a joint decision to continue an unintended pregnancy [19]. Pregnancy continuation for these couples was more likely to be perceived as a female-only versus a joint decision when the man's initial pregnancy intention disagreed with his relationship partner. The decision to terminate an unintended pregnancy was reported as joint in 61% of female and 74% of male reported pregnancy outcome decisions [19]. Pregnancy termination was more likely to be perceived as a female only decision if women reported an unstable relationship at the time of conception.

This incomplete record underscores the need to assemble a comprehensive profile of the paternal and pregnancy outcome intentions and experience of men as an independent exemplar. Pivotal to assembling this profile is determining the extent to which men are informed of their paternity and/or pregnancy outcome. Amassing an informed account of paternal and pregnancy outcome intentions and pregnancy experience of men is fundamental to responding to the United States as well as global health primacy to abate unintended pregnancy. Accounting for the existential choice of paternity of undergraduate men as an independent exemplar—responds to the vacuity of empirical accounts in the literature.

Purpose

This study examined the fecundation intent and pregnancy outcome experience of undergraduate men and their sexual partners juxtaposed to the fecundation intent and pregnancy outcome experience of undergraduate women with their sexual partners. Null hypotheses were tested given the paucity of data examining the fecundation and pregnancy outcome intentions of men in the literature. The following null hypotheses were tested referencing first (lifetime) fecundation event:

H_1: There are no significant differences in pregnancy notification to men (during the time of their pregnancy) by their sexual partners versus women notifying their sexual partners of a resultant pregnancy.

H_2: There are no significant differences in fecundation intent between men and their sexual partners versus women and their sexual partners.

H_3: There are no significant differences in intended pregnancy outcome (live birth or abortion) between men and their sexual partners versus women and their sexual partners.

H_4: There are no significant differences in pregnancy outcome (live birth or abortion) between men and their sexual partners versus women and their sexual partners.

H_5: There are no significant differences in relationship status at conception between men and their sexual partners versus women and their sexual partners.

H_6: There are no significant differences in relationship status in pregnancy outcome between men and their sexual partners versus women and their sexual partners.

Methods

Procedures

Respondents were recruited from Health Education course sections that were either required or elective courses for all but five of the college's degree programs. Students enrolled in the college's health education courses were recruited in a research study presentation during their regularly scheduled class session. Respondents were 18 years or older. Consent forms were obtained from each respondent. There were no identifiers linking respondents to their responses. Classroom seating for the survey was arranged in formal test-taking configuration. The in-class survey was voluntary, anonymous, and averaged 39-minutes. There was no incentive offered to respondents and non-respondents for participation in the study. Respondents opting out of the survey completed an in-class worksheet. Participants placed their instrument or worksheet in a sealed envelope and then into a cloaked ballot box. This study was sanctioned by the University's Institutional Research Review Committee.

Sample

A retrospective cross-sectional survey utilizing a convenience sample was drawn from the general population of undergraduates at a United States public, northeastern, non-residential community college. The college enrollment was 23 938 with a median age of 22.0 years. In all, 1 846 instruments were submitted of which 1 830 instruments were coded. The 1 830 respondents represented 7.6% of the undergraduate enrollment at the college that semester. Of the 1 830 respondents, 1 028 were female.

Undergraduates reported their ethnicity and that of their biological parents. A variable matrix was calculated to cross-validate reported ethnicity with that of both biological parents. This resulted in 1 734 response sets of men (n = 687) and women (n = 1 048) in five ethnic categories: Caucasian (hereafter White) (n = 187), African-American (hereafter Black) (n = 438), Hispanic-non-White (hereafter Hispanic) (n = 769), Asian/Pacific Islander (hereafter Asian) (n = 203), and multi-racial (n = 138).

Measures

The survey instrument recorded in part, comprehensive demographics of ethnicity, and natal gender. The instrument recorded tallies of respondents' coital experience and pregnancy intentions as well as pregnancy outcome events. Previous studies reported α =.85 to α =.91 reliability coefficients for the instrument [20-23]. Tests of significance (SPSS IBM Advanced Statistics Version 24.0.0) were chi-square (X^2) for nominal variables, independent-sample *t tests* (*t*), one-way ANOVA (*F*) and ANCOVA for scaled variables. Type 1 error rate was set to $p < .05$.

Results

Demographics

Respondents comprised men (n = 687) and women (n = 1048) in five ethnicities: White (10.8%), Black (25.2%), Hispanic (44.3%), Asian (11.7%), and multi-racial (8.0%). There were no significant differences between the sample's demographics and that of the college's sum enrollment population in terms of ethnicity, age and gender. There was no significant age difference between men and women ($t(1650) = -0.459$, $p = 0.646$). There was a significant age difference between men and ethnicity (Table 1). Hispanic men proved to be the youngest ($M_{age} = 20.74$) and White men the oldest ($M_{age} = 24.21$). There was a significant age difference between women and ethnicity (Table 2). Hispanic women proved to be the youngest ($M_{age} = 20.76$) and White women the oldest ($M_{age} = 23.59$).

	n	M	SD	*F*	df1/df2	p-value	η^2
Age				7.212	4, 648	**.000**	.04
White	65	24.21	7.23				
African-American	163	22.32	5.69				
Hispanic/non-White	297	20.74	3.36				
Asian/Pacific Islanders	79	21.85	3.66				
Multi-racial	49	22.49	9.65				
Age at First Coitus†				6.707	4, 444	**.000**	.05
White	38	15.68	2.07				
African-American	117	15.21	2.91				
Hispanic/non-White	214	15.61	2.40				
Asian/Pacific Islanders	42	17.41	3.47				
Multi-racial	38	14.83	2.37				
Age of Partner at First Coitus†				2.378	4, 428	.056	.02
White	37	16.93	4.60				
African-American	114	16.49	4.29				
Hispanic/non-White	204	16.52	3.13				
Asian/Pacific Islanders	40	17.90	3.88				
Multi-racial	38	15.47	2.65				
Lifetime Number of Coital Partners†				3.056	4, 436	**.017**	.02
White	39	12.87	18.18				
African-American	111	11.47	10.86				

Hispanic/non-White	210	9.11	10.70				
Asian/Pacific Islanders	43	5.88	6.20				
Multi-racial	38	9.44	11.90				
Age at First Pregnancy†				0.999	4, 101	.412	.03
White	11	19.18	3.47				
African-American	28	19.41	2.56				
Hispanic/non-White	48	19.00	3.51				
Asian/Pacific Islanders	8	21.10	6.14				
Multi-racial	11	18.43	2.97				
Partner's Age at First Pregnancy†				1.495	4, 100	.209	.05
White	10	18.28	3.03				
African-American	29	19.05	3.25				
Hispanic/non-White	47	19.59	4.17				
Asian/Pacific Islanders	8	20.87	5.55				
Multi-racial	11	17.43	2.60				
Age at First Abortion				1.318	4, 46	.278	
White	5	19.74	3.63				
African-American	14	19.95	2.47				
Hispanic/non-White	21	18.47	3.10				
Asian/Pacific Islanders	4	19.44	2.08				
Multi-racial	7	17.18	2.34				
Age at First Paternity (Live Birth)							
White	4	22.50	3.70				
African-American	11	23.64	3.04				
Hispanic/non-White	20	19.90	4.48				
Asian/Pacific Islanders	4	27.50	5.92				
Multi-racial	3	20.33	3.21				
Mother's Age at First Paternity (Live Birth)							
White	3	19.00	3.60				
African-American	9	22.78	4.15				
Hispanic/non-White	19	20.37	3.92				
Asian/Pacific Islanders	4	26.00	5.16				
Multi-racial	3	19.33	2.52				
Lifetime Number of Impregnations†				1.040	4, 113	.390	.03

White	10	0.92	0.87				
African-American	29	1.04	1.57				
Hispanic/non-White	55	1.31	2.04				
Asian/Pacific Islanders	13	0.28	0.48				
Multi-racial	11	1.28	1.29				
Lifetime Number of Impregnated Partners†				1.376	4, 105	.247	.05
White	10	0.90	0.94				
African-American	28	0.94	1.21				
Hispanic/non-White	51	0.80	0.88				
Asian/Pacific Islanders	12	0.31	0.49				
Multi-racial	9	1.26	1.22				
† ANCOVA estimated marginal means							

Table 1: Coital and Fecundity Experience of Men.

Coital Experience

There was a significant age difference at first coitus between men and women ($t(1225) = -4.620$, $p = 0.000$), with men younger ($M_{age} = 15.62$, $SD = 2.70$) than women ($M_{age} = 16.32$, $SD = 2.48$). (Note: Where there was a significant age difference in scaled variables—ANCOVA was calculated with age as the covariant and estimated marginal means reported.) There was a significant age difference at first coitus between men by ethnicity, with multi-racial men the youngest ($M_{age} = 14.83$) and Asian men the oldest ($M_{age} = 17.41$) (Table 1). There was a significant age difference at first coitus between women by ethnicity, with multi-racial women the youngest ($M_{age} = 15.65$) and Asian women the oldest ($M_{age} = 18.08$) (Table 2).

	n	M	SD	*F*	df1/df2	p-value	η^2
Age				10.833	4, 994	**.000**	.04
White	114	23.59	5.74				
African-American	244	22.54	5.89				
Hispanic/non-White	448	20.76	4.20				
Asian/Pacific Islanders	115	22.63	4.90				
Multi-racial	78	22.50	5.60				
Age at First Coitus†				12.200	4, 718	**.000**	.06
White	92	16.94	3.05				
African-American	179	16.02	2.40				
Hispanic/non-White	337	16.16	1.98				
Asian/Pacific Islanders	57	18.08	3.45				
Multi-racial	58	15.65	1.98				
Age of Partner at First Coitus†				11.373	4, 683	**.000**	.06
White	89	20.55	5.15				

African-American	167	18.55	3.51				
Hispanic/non-White	324	18.12	3.18				
Asian/Pacific Islanders	51	20.30	5.40				
Multi-racial	57	17.67	2.64				
Lifetime Number of Coital Partners†				9.763	4, 713	**.000**	.05
White	90	9.35	13.75				
African-American	175	6.86	7.72				
Hispanic/non-White	335	5.38	7.38				
Asian/Pacific Islanders	60	3.11	3.78				
Multi-racial	58	11.22	14.88				
Age at First Pregnancy†				5.638	4, 242	**.000**	.07
White	22	21.89	5.41				
African-American	71	18.97	3.74				
Hispanic/non-White	110	18.45	2.98				
Asian/Pacific Islanders	15	20.72	4.46				
Multi-racial	29	19.51	3.34				
Partner's Age at First Pregnancy †				8.437	4, 235	**.000**	.10
White	22	27.10	7.52				
African-American	68	22.24	5.22				
Hispanic/non-White	107	21.04	4.04				
Asian/Pacific Islanders	14	23.18	5.77				
Multi-racial	29	21.52	4.20				
Age at First Abortion†				2.503	4, 111	**.046**	.07
White	7	19.00	3.46				
African-American	31	17.57	2.35				
Hispanic/non-White	54	17.70	2.90				
Asian/Pacific Islanders	8	20.01	4.81				
Multi-racial	16	19.40	2.97				
Age at First Live Birth†				5.625	4, 111	**.000**	.15
White	10	25.43	6.83				
African-American	39	20.53	3.60				
Hispanic/non-White	46	20.10	2.99				
Asian/Pacific Islanders	7	24.84	7.41				
Multi-racial	14	20.55	3.48				

Father's Age at First Live Birth†				6.671	4, 106	**.000**	.18
White	10	29.49	6.42				
African-American	38	24.31	5.48				
Hispanic/non-White	43	23.20	4.11				
Asian/Pacific Islanders	6	32.09	8.47				
Multi-racial	14	23.01	4.10				
Lifetime Number of Pregnancies †				2.294	4, 219	.060	.03
White	23	1.06	0.95				
African-American	65	1.50	1.30				
Hispanic/non-White	96	1.65	1.35				
Asian/Pacific Islanders	15	0.95	1.30				
Multi-racial	25	1.26	0.94				
Lifetime Number of Fecundity Partners†				0.131	4, 188	.971	.00
White	18	1.08	0.68				
African-American	54	1.09	0.78				
Hispanic/non-White	86	1.11	0.69				
Asian/Pacific Islanders	12	0.98	0.90				
Multi-racial	23	1.16	0.78				
† ANCOVA estimated marginal means							

Table 2: Coital and Fecundity Experience of Women.

There was no significant difference between ethnicity and the age of men's first coital partner. However, there was a significant difference between ethnicity and the age of women's first coital partner, with multi-racial women reporting the youngest first coital partner (M_{age} = 17.67) and White women reporting the oldest first coital partner (M_{age} = 20.55) (Table 2). There was a significant difference between ethnicity and men's lifetime number of coital partners with White men reporting the highest (M = 12.87) and Asian men reporting the lowest (M = 5.58) (Table 1). There was a significant difference between ethnicity and women's lifetime number of coital partners with multi-racial women reporting the highest (M = 11.22) and Asian women reporting the lowest (M = 3.11) (Table 2).

Fecundation Experience

There was a significant difference in fecundation experience between men and women, in that 22.7% of men had ever impregnated a woman, and 30.0% of women had ever been pregnant (Table 3). There was no significant difference in fecundation experience between White men and women, Hispanic men and women, or Asian men and women. There was a significant difference in fecundation experience between Blacks, where 23.7% of Black men had ever impregnated a woman and 38.0% of Black women had ever been pregnant. There was a significant difference in fecundation experience between multi-racial respondents, where 24.4% of multi-racial men had ever impregnated a woman and 42.9% of multi-racial women had ever been pregnant (Table 3).

	%	**n**	**X^2**	***df***	***p* value**
Fecundation[b]					
Gender		1440	8.230	1	**.001**
Men	22.7				

Women	30.0				
White		154	0.215	1	.401
Men	20.0				
Women	23.2				
African-American		355	7.811	1	**.003**
Men	23.7				
Women	38.0				
Hispanic/non-White		663	2.067	1	.089
Men	23.1				
Women	28.2				
Asian/Pacific Islanders		152	0.068	1	.479
Men	18.9				
Women	17.2				
Multi-racial		115	4.048	1	**.034**
Men	24.4				
Women	42,9				
Fecundation Notification[b]					
Gender		365	5.114	1	**.021**
Men	83.8				
Women	91.7				
White		30	0.408	1	.517[c]
Men	88.9				
Women	95.2				
African-American		106	3.954	1	**.049**
Men	72.4				
Women	88.3				
Hispanic/non-White		165	4.731	1	**.032**
Men	83.0				
Women	93.8				
Asian/Pacific Islanders		24			
Men	100.0				
Women	100.0				
Multi-racial		39	1.751	1	.249[c]
Men	100.0				

Women	85.7				
Fecundation Intent of Sexual Partner[b]		378	6.027	2	**.047**
Men	12.8				
Women	20.3				
Intended a Live-Birth[b]					
Gender		354	7.719	1	**.004**
Men	43.9				
Women	59.9				
White		31	7.056	1	**.010**[c]
Men	11.1				
Women	63.6				
African-American		100	5.783	1	**.016**
Men	42.3				
Women	68.9				
Hispanic/non-White		161	1.359	1	.159
Men	46.2				
Women	56.0				
Asian/Pacific Islanders		23	0.068	1	.567[c]
Men	44.4				
Women	50.0				
Multi-racial		38	0.209	1	.466
Men	63.6				
Women	55.6				
Intended to Abort Pregnancy[b]					
Gender		351	5.025	1	**.017**
Men	53.8				
Women	40.8				
White		28	4.725	1	**.040**[c]
Men	75.0				
Women	30.0				
African-American		98	2.740	1	.079
Men	54.2				
Women	35.1				
Hispanic/non-White		162	0.606	1	.270

Men	51.9				
Women	45.4				
Asian/Pacific Islanders		23	0.354	1	.433[c]
Men	44.4				
Women	57.1				
Multi-racial		39	1.158	1	.237
Men	54.5				
Women	35.7				
Sexual Partner Intended to Abort Pregnancy[b]		349	1.753	1	.115
Men	43.0				
Women	35.5				
Pregnancy Outcome[d]		369	7.167	2	**.024**
Men					
Miscarriage	24.6				
Abortion	50.9				
Live Birth	24.6				
Women					
Miscarriage	14.9				
Abortion	49.4				
Live Birth	35.7				
Pregnancy Outcomes of Blacks		110	8.174	2	**.015**
Men					
Miscarriage	31.2				
Abortion	53.1				
Live Birth	15.6				
Women					
Miscarriage	14.1				
Abortion	44.9				
Live Birth	41.0				
Relationship Status at Fecundation Intent[d]					
Men intending their pregnancy		103	1.726	2	.456[c]
Married	0.0				
Cohabiting	16.7				
Single	10.6				

Women intending their pregnancy		242	58.042	2	**.000**
Married	62.1				
Cohabiting	7.7				
Single	9.2				
Relationship Status at Live Birth		358	8.964	2	**.013**
Men					
Married	8.3				
Cohabitating	29.6				
Single	62.0				
Women					
Married	12.0				
Cohabitating	43.2				
Single	44.8				
Relationship Status of Blacks at Live Birth[d]		104	8.662	2	**.012**
Men					
Married	0.0				
Cohabitating	29.6				
Single	70.4				
Women					
Married	13.0				
Cohabitating	46.8				
Single	40.3				
[a] Significantly different variables in boldface					
[b] Fisher's Exact Test (1-sided)					
[c] Cells with expected counts <5					
[d] Monte Carlo 10000 sampled tables 99% CI					
[e] Fecundation responses of 'don't know' were coded as missing data.					

Table 3: Fecundation Notification, Intent, and Outcome Experience[a,e] .

There was no significant age difference at first pregnancy between men (M_{age} = 19.27) and women (M_{age} = 19.17) ($t(370)$ = 0.234, p = 0.815). There was no significant age difference at first pregnancy and male ethnicity (Table 1). There was a significant age difference at first pregnancy and female ethnicity, with Hispanic women being the youngest (M_{age} = 18.45) and White women the oldest (M_{age} = 21.89) (Table 2). There was a significant difference in the age of partners at first pregnancy between men (M_{age} = 19.31) and women (M_{age} = 22.13) ($t(361)$ = 13.143, p = 0.000). There was no significant difference in the age of partners at first pregnancy and male ethnicity (Table 1). There was a significant difference in the age of sexual partners at first pregnancy and female ethnicity, with Hispanic women having the youngest (M_{age} = 21.04) and White women the oldest (M_{age} = 27.10) aged sexual partners (Table 2).

Fecundation Notification

There was a significant difference in pregnancy notification to men by women (Table 3). While 83.8% of men were notified, 91.7% of women reported that they notified the father of their pregnancy. There was no significant difference in pregnancy notification between White men and women, Asian men and women, or multi-racial men and women. There was a significant difference in pregnancy notification for Blacks, where 72.4% of Black men were notified compared to 88.3% of Black women that notified the father of their pregnancy. There was a significant difference in pregnancy notification between Hispanics, where 83.0% of Hispanic men were notified compared to 93.8% of Hispanic women that notified the father of their pregnancy (Table 3).

Fecundation Intent

Twelve percent of men and 14.6% of women intended their pregnancy, with no significant difference. There was a significant difference between men and women in the fecundation intent of their sexual partners. While 12.8% of men's partners intended their first pregnancy, 20.3% of women's partners intended their first pregnancy (Table 3).

Intended Live Birth

There was a significant difference between men and women intending a live birth. As such, 43.9% of men and 59.9% of women intended a live birth. (Table 3). There was no significant difference between Hispanic men and women, Asian men and women, or multi-racial men and women in intending a live birth. There was a significant difference between White men (11.1%) and White women (63.6%) intending a live birth. There was a significant difference between Black men (42.3%) and Black women (68.9%) intending a live birth (Table 3).

Intent to Abort Pregnancy

There was no significant age difference at first abortion between men (M_{age} = 18.90) and women (M_{age} = 18.15). There was no significant age difference at first abortion by male ethnicity (Table 1). There was a significant age difference at first abortion and female ethnicity, with Black women the youngest (M_{age} = 17.57) and Asian women the oldest (M_{age} = 20.01) (Table 2).

There was a significant difference between men and women intending to abort their pregnancy. While 53.8% of men intended to abort their pregnancy, 40.8% of women intended to abort their pregnancy (Table 3). There was no significant difference between Black men and women, Hispanic men and women, Asian men and women, or multi-racial men and women intending to abort their pregnancy. Significantly more White men (75.0%) intended to abort their pregnancy than White women (30.0%). There was no significant difference between men and women in their partners' intention to abort their pregnancy (Table 3).

Pregnancy Outcome

There was a significant difference between men and women and their first pregnancy outcome. Pregnancy outcome for men resulted in 24.6% miscarriages, 50.9% abortions, and 24.6% live births. Pregnancy outcome for women resulted in 14.9% miscarriages, 49.4% abortions, and 35.7% live births (Table 3). There was no significant difference between White men and women, Hispanic men and women, Asian men and women, or multi-racial men and women in their pregnancy outcomes. There was a significant difference between Black men and women in their pregnancy outcomes. First pregnancy outcome for Black men was 31.2% miscarriages, 53.1% abortions, and 15.6% live births. First pregnancy outcome for Black women was 14.1% miscarriages, 44.9% abortions, and 41.0% live births (Table 3).

Fecundation Intention and Relationship Status

There was no significant difference in fecundation intent and relationship status for men. However, none of the married men intended their pregnancy. There was a significant difference in fecundation intent and relationship status for women with; 62.1% of married women, 7.7% of cohabiting women, and 9.2% of single women intending their first pregnancy (Table 3).

Relationship Status at Live Birth

There was a significant difference between men and women and their relationship status at live birth. At live birth, 8.3% of men were married, 29.6% cohabitating, and 62.0% were single. At live birth, 12.0% of women were married, 43.2% cohabitating, and 44.8% were single. There was no significant difference between White men and women, Hispanic men and women, Asian men and women, or multi-racial men and women in their relationship status at live birth. There was a significant difference in relationship status at live birth for Black men and women. At live birth, 0.0% of Black men were married, 29.6% cohabitating, and 70.4% were single. At live birth, 13.0% of Black women were married, 46.8% cohabitating, and 40.3% were single (Table 3).

Relationship Status and Pregnancy Outcome

There were significant differences in relationship status and pregnancy outcome for men as well as women. For married men, 11.1% ended in miscarriage, 11.1% in abortion, with the remainder in live births. For cohabiting men, 16.1% ended in miscarriage, 45.2% in abortion, with the remainder in live births. For single men, 29.4% ended in miscarriage, 57.4% in abortion, with the remainder in live births (Table 4).

For married women, 10.0% ended in miscarriage, 3.3% in abortion, with the remainder in live births. For cohabiting women, 15.4% ended in miscarriage, 51.0% in abortion, with the remainder in live births. For single women, 12.3% ended in miscarriage, 58.8% in abortion, with the remainder in live births (Table 4).

	Pregnancy Outcome (%)			n	X^2	*df*	*p* value
	Miscarriage	**Abortion**	**Birth**				
Men				108	20.941	2	**.000**
Married	11.1	11.1	77.8				
Cohabiting	16.1	45.2	38.7				
Single	29.4	57.4	13.2				
Women				248	34.991	2	**.000**
Married	10.0	3.3	86.7				
Cohabiting	15.4	51.0	33.6				
Single	12.3	58.8	28.9				

Table 4: Relationship Status and Pregnancy Outcome.

Fecundation Intent by Pregnancy Outcome

There were significant differences between men and their sexual partners regarding their fecundation intent and pregnancy outcome. When men intended the pregnancy as well as their sexual partners—50% ended in abortion/miscarriage and 50% in live births. When pregnancy was intended by the man but not his sexual partner; 42.9% ended in abortion/miscarriage and 57.1% in a live birth. When the man did not intend the pregnancy and his sexual partner did; 75.0% ended in abortion/miscarriage and 25.0% in a live birth. When a pregnancy was not intended by both sexual partners; 86.6% ended in abortion/miscarriage and 13.4% in a live birth (Table 5).

There were significant differences between women and their sexual partners regarding their fecundation intent and pregnancy outcome. For women, when she intended her pregnancy as well as her sexual partner; 20.7% ended in abortion/miscarriage and 79.3% in a live birth. When the pregnancy was intended by the woman but not her sexual partner; 16.7% ended in abortion/miscarriage and 83.3% in a live birth. When the woman did not intend the pregnancy and her sexual partner did; 63.0% ended in abortion/miscarriage and 37.0% in a live birth. When a pregnancy was not intended by both sexual partners; 77.1% ended in abortion/miscarriage and 22.9% in live births (Table 5).

	%	n	X^2	*df*	*p* value
Pregnancy Intention by Pregnancy Outcome for Men		104	11.037	3	**.015bc**
Man Intended/Partner Intended					
Abortion/Miscarriage	50.0				
Live Birth	50.0				
Man Intended/ Partner Did Not Intend					
Abortion/Miscarriage	42.9				
Live Birth	57.1				
Man Did Not Intend/ Partner Intended					
Abortion/Miscarriage	75.0				
Live Birth	25.0				
Man Did Not Intend/ Partner Did Not Intend					
Abortion/Miscarriage	86.6				
Live Birth	13.4				
Pregnancy Intention by Pregnancy Outcome for Women		242	41.515	3	**.000bc**
Woman Intended/Partner Intended					

Abortion/Miscarriage	20.7				
Live Birth	79.3				
Woman Intended/ Partner Did Not Intend					
Abortion/Miscarriage	16.7				
Live Birth	83.3				
Woman Did Not Intend/ Partner Intended					
Abortion/Miscarriage	63.0				
Live Birth	37.0				
Woman Did Not Intend/ Partner Did Not Intend					
Abortion/Miscarriage	77.1				
Live Birth	22.9				
a Significantly different variables in boldface					
b Monte Carlo (10000 sampled tables) at 99% CI (2-sided)					
c Cells with expected counts <5					

Table 5: Fecundation Intent and Pregnancy Outcome[a.]

Strengths and Limitations

This investigation should be interpreted with limitations. Causality cannot be inferred from this cross-sectional analysis. The study drew a convenience sample from a two-year college of undergraduates, limiting its generalizability. Nevertheless, this sample provided insight in applying the research question to understudied ethnic populations of undergraduate men. This sample provided insight into the research question given that it was a population of unpaired sexual partners not clustered by proxy-identified or self-identified relationship status, fecundity, abortion, or live birth experience. In addition, the sample was from a pedestrian population and not a delimited collective solicited via social media, counseling/patient population, abortion counseling/patient population, pregnancy (neonate) counseling/patient population, or from a public or school health education unintended pregnancy high-risk population.

Discussion

This study examined the fecundation intent and pregnancy outcome experience of undergraduate men and their sexual partners juxtaposed to women's fecundation intent and pregnancy outcome experience with their sexual partners. The H_1 hypothesis was rejected. There were twice the number of men not notified of their pregnancy (during the time of their pregnancy) by their sexual partners as the number of sexual partners (fathers) not notified of their pregnancy by women. Lindberg and Kost reported that 11% of single men were 'unaware' of their pregnancy before birth [11]. Keep in mind, the Lindberg and Kost sample is restricted to men experiencing a live birth in the past five years. In this study, one in six men were not notified of their pregnancy (during the time of their pregnancy). Lindberg and Kost reported that 5% of Black and 5% of Hispanic fathers were unaware of their pregnancy prior to birth [11]. In this study, 28% of Black and 17% of Hispanic fathers reported that they were not notified of their pregnancy. In this study, one in six men were denied a role (voice) in their pregnancy event, and this was especially true for Black fathers.

There was a significant difference in the fecundation intent of men and their sexual partners. The H_2 hypothesis was rejected. The finding that 88% of men did not intend their pregnancy differs markedly from Martinez et al. report that 34% of men did not intend their pregnancy [18]. Again, this marked difference in proportion further underlines the inferential risk in extrapolating NSFG data to childless men or undergraduate men. One in eight sexual partners of men intended their pregnancy. However, one in five sexual partners of women intended their pregnancy. Undergraduate men reported a significantly greater number of sexual partners who did not intend their pregnancy than undergraduate women.

There was a significant difference between undergraduate men and women intending a live birth as an outcome of their pregnancy. The H_3 hypothesis was rejected. Scholars report between 50%-65%[3] of live births were intended by the father [11,18]. In this study, 44% of men intended the pregnancy to end in a live birth. Significant differences occurred within ethnicity, with two in five Black men intending a live birth, compared to seven in ten Black women. Just about one in ten White men intended a live birth compared to just about two in three White women. There was a significant difference between undergraduate men and women intending to abort their pregnancy. Better than one in two men intended to abort their pregnancy, compared to two in five women. This differs markedly from the Lee et al. study of fiancée/relationship couples wherein 82% of women and 88% of men within a fiancée/relationship made a joint decision to continue an

unintended pregnancy [19]. In this study, 13.4% of men and 22.9% of women continued an unintended pregnancy. This gap was most striking in that three in four White men intended to abort their pregnancy, compared to three in ten White women. Undergraduate men were significantly less likely to intend a live birth and more likely to intend to abort their pregnancy. Sampling only 'sexual couples' or men who experienced a live birth in the past five years patently obscures the fecundation intent and pregnancy outcome experience of undergraduate men as well as men as an independent exemplar. This is most true for White men.

Pregnancy outcome for men was; one in four miscarriages, one in four live births, and one in two abortions. Pregnancy outcome for women was; 15% miscarriage, 50% live birth, and 35% abortion. The H_4 hypothesis was rejected. The pregnancy outcome for men and their sexual partners was significantly different than for women and their sexual partners. For Black men, three in ten pregnancies resulted in a miscarriage, compared to one in seven for Black women. For Black men, one in six pregnancies resulted in a live birth, compared to two in five for Black women.

A prominent distinction in pregnancy outcome was the 15% of women reporting a miscarriage with their sexual partners juxtaposed to 25% of men reporting a miscarriage with their sexual partners. The 15% miscarriage rate reported by women is well within the expected range for clinically identified pregnancies ending in miscarriage, albeit first pregnancies tend to have higher rates [24]. The reported miscarriage rate by Black women with their sexual partners was well within the expected range for clinically identified pregnancies ending in miscarriage. This suggests that socioeconomic variables were not in play in the elevated rates of miscarriage reported by sexual partners of men. The 25% miscarriage rate reported by sexual partners of men is well outside the expected range for pregnancies ending in miscarriage. A credible interpretation for this conspicuous difference is that a proportion of miscarriages reported to men were concealed pregnancy terminations or live births by their sexual partners. This is supported by the greater number of women reporting a pregnancy than that of men notified or aware of their sexual partner being pregnant. This is also supported by the greater number of women intending their pregnancy in marriage. Pregnancy as well as a pregnancy termination event that is concealed from the man (father) by their sexual partner, denies the father a role (voice) in their pregnancy, pregnancy outcome, offspring, and family.

Sixty-two percent of married women compared to 0% of married men intended their pregnancy. Women were ever more likely to intend their pregnancy in marriage. The H_5 hypothesis was rejected. Given the relatively young age of the respondents and that women were significantly older than men—it seems at this point in time children in marriage were more of a priority for undergraduate women than for undergraduate men. This 'childless intention' gap may decrease as undergraduate men become older and more financially established. Nevertheless, for these men an unintended pregnancy may have resulted in an unintended marriage. The absence of a shared marital goal for offspring, as well as sexual partners' accord in the timing of offspring—presents a threat to marital harmony and relationship stability. Marital discord concerning the man's paternal commitment breeds marital dissension within the relationship. Notably, the paternal locus of control of the husband is often neglected in unintended pregnancy and family life education interventions.

The relationship status for undergraduate men at live birth was 8% married, 30% cohabitating, and 62% single—which was significantly different than the relationship status for undergraduate women at live birth, that being 12% married, 43% cohabitating, and 45% single. The relationship status for pregnancy outcome for undergraduate men and their sexual partners was significantly different than for undergraduate women and their sexual partners. The H_6 hypothesis was rejected. Single men were nearly three times more likely for their pregnancy to end in a miscarriage than married men. Notably, 86.8% of pregnancy outcomes for undergraduate men were either miscarriages or abortions—with the miscarriage rate for undergraduate men being 2.4 times that of undergraduate women with their sexual partners.

Overall, undergraduate men realizing their paternal intent and desired pregnancy outcome with their sexual partners was significantly different than for undergraduate women with their sexual partners. For men, relationship status was not significantly different and had little bearing on men's intention to impregnate. For women, relationship status was significantly different, with married women eight times more likely to intend their pregnancy than cohabiting or single women. Comparable percentages of single men and single women intended their pregnancies. However, the percentage of cohabiting men intending their pregnancy was twice that of cohabiting women. Rather than marriage, cohabitation was the relationship status most likely for undergraduate men to intend their first pregnancy, and in turn family. This observation is novel and in turn most worthy of future investigation, as well as inclusion in sex education primacies.

Keeping in mind the unaccounted number of conceptions, abortions, miscarriages, and live births unknown to men … four in five times a live birth occurred when the man did not intend a live birth and his sexual partner did. Only one in three times a live birth occurred when the man intended a live birth and his sexual partner did not. These results reflect Lee et al. observation that pregnancy continuation and pregnancy termination is more likely a female-only, rather than a joint decision [19]. This difference is reflected in equating paternal intent against pregnancy outcome. Overall, nine in ten times there was discord between men and women, and their sexual partners, in their paternal or maternal intent tracked through their pregnancy outcome experience. Regardless of their sexual partners' intent—undergraduate men were less likely than undergraduate women to realize their pregnancy intent, pregnancy outcome, and family.

Conclusions

Better than one in four undergraduate men and one in four undergraduate women experienced one or more pregnancies. Ninety percent of pregnancies were unintended by one or both sexual partners and 90% of pregnancy outcome events were unintended by one or both sexual partners. One in six undergraduate men were not notified of their pregnancy. One in four undergraduate Black men were not notified of their pregnancy. Three in four undergraduate White men intended to abort their pregnancy. A notable proportion of pregnancies as well as pregnancy terminations and live births were concealed from undergraduate men (fathers) by their sexual/relationship partners. Four in five times a live birth occurred when the father did not intend a live birth and his sexual partner did. One in three times a live birth occurred when the father intended a live birth and his sexual partner did not. Regardless of their sexual partners' intent—undergraduate men were less likely than undergraduate women to realize their pregnancy intent, pregnancy outcome, and family. In turn, a substantial proportion of undergraduate men were denied a voice in their paternal intent, pregnancy outcome, and family.

Public and Higher Education Sex Education Policy

A proportion of disagreement in paternal and maternal intent as well as desired pregnancy outcome by undergraduate men and women with their sexual partners was anticipated. Nonetheless, the magnitude of discord between paternal and maternal intent and desired pregnancy outcome between undergraduate men and women was sobering. Paternal and maternal intent and desired pregnancy outcome is an existential family life event. Given the proclivity of undergraduates for sexual engagement and the concern for abating unintended pregnancies, sex education rightfully emerges as a public and school health education as well as higher education curricular imperative. Manifestly, the higher education curricular imperative for sex education ascends as a recommendation from this study.

'Sex education' is presumably pervasive in public and higher education curricula in some form or by some discipline, be it birth-control, sexual relationships, sexually transmitted diseases, pregnancy, or parturition. The assumption is that sex education topics such as birth-control and pregnancy address the existential family life decisions of paternity and maternity. This is not the case. The paternal/maternal health decision-making skill set is often lost in the proliferation of crisis or politic issues in 'sex education' that displace mainstay family life education. Furthermore, instructors in sex education are often not certified or career (sex) health educators. Local and state mandates for sex education as well as health education are often ignored or have been expunged from United States K-12 and higher education liberal arts degrees.

"… in 2014, the City University of New York (approximately 250,000 students) enacted general studies (liberal arts) reforms that have all but eliminated required health education and physical education credit-bearing courses from their applied science, associate, and baccalaureate degree programs. Unquestionably, the United States' public education and higher education infrastructure represents the most conspicuously underutilized resource to health educate America's youth and adult populations" [23].

There is an imperative to mandate as well as implement 'sex education' credit-bearing courses in United States higher education liberal arts degree programs.

Undoubtedly, the paternal/maternal existential family life decision is a charge of sex education given its mission to infuse in adolescent and undergraduate men and women a cognitive foundation for health-risk assessment, so as to underwrite a conation for personal responsibility and investment in consensual sexual intimacy and birth-control practice. The paternal/maternal locus-of-control decision-making skill set is a sequitur of family. In turn, the higher education schooling of undergraduate men and women in family life education remains the foremost underutilized resource to abate unintended pregnancy and just as importantly unintended pregnancy outcome. Dedicated credit-bearing health education degree courses—taught by professionally prepared health educationists in family life education is the requisite intervention to enrich the individual's existential choice of family as well as advance the health of the nation state.

Compliance with Ethical Standards

1. **Statement of Human Rights:** This study was approved by The City University of New York Institutional Research Review Board (IRB NET#: 11-12-037-0140). Informed consent was obtained from all individual participants included in the study.
2. **Financial disclosure:** None
3. **Conflict of interest:** None

References

1. Manchikanti-Gómez A, Arteaga S, Villaseñor E, Arcara J, Freihart B (2019) The misclassification of ambivalence in pregnancy intentions: A mixed-methods Analysis. Perspectives on Sexual and Reproductive Health 51: 7-15.
2. Weitzman A, Barber J, Kusunoki Y, England P (2017) Desire for and to avoid pregnancy during the transition to adulthood. Journal of Marriage and Family 79: 1060-1075.
3. Singh S, Sedgh G, Hussain R (2010) Unintended pregnancy: Worldwide levels, trends, and outcomes. Studies in Family Planning 41: 241-250.
4. Hall J, Bentonc, Copas A, Stephenson J (2017) Pregnancy intention and pregnancy outcome: Systematic review and meta-analysis. Maternal and Child Health Journal 21: 670-704.
5. Kathryn K, Lindberg L (2015) Pregnancy intentions, maternal behaviors, and infant health: Investigating relationships with new measures and propensity score analysis. Demography 52: 83-111.

6. Rajan S, Morgan S, Harris K, Guilkey D, Hayford S, et al. (2017) Trajectories of unintended fertility. Population Research and Policy Review 3: 903-928.

7. Centers for Disease Control and Prevention (2018) Pregnancy Risk Assessment Monitoring System. Centers for Disease Control and Prevention, Division of Reproductive Health; Atlanta, GA. Retrieved on June 20, 2020.

8. National Survey of Family Growth (2020) 2015-2017 NSFG: Public-Use Data Files, Codebooks, and Documentation. National Center for Health Statistics- Reproductive Statistics Branch; Hyattsville, MD. Retrieved on June 20, 2020.

9. Morgan P, Rackin H (2010) The correspondence between fertility intentions and behavior in the united states. Population and Development Review 36: 91-118.

10. Santelli J, Speizer I, Avery A, Kendall C (2006) An exploration of the dimensions of pregnancy intentions among women choosing to terminate pregnancy or to initiate prenatal care in new orleans, louisiana. American Journal of Public Health, 96: 2009-2015.

11. Lindberg L, Kost K (2014) Exploring u.s. men's birth intentions. Maternal and Child Health Journal 18: 625-633.

12. Bachrach C, Morgan P (2013) A cognitive-social model of fertility intentions. Population and Development Review 39: 459-485.

13. Billingsley S, Ferrarini T (2014) Family policy and fertility intentions in 21 european countries. Journal of Marriage and Family 76: 428-445.

14. Compernolle E (2017) Disentangling perceived norms: Predictors of unintended pregnancy during the transition to adulthood. Journal of Marriage and the Family 79: 1076-1095.

15. Huang C (2005) Pregnancy intention from men's perspectives: Does child support enforcement matter? Perspectives on Sexual and Reproductive Health 37: 119-124.

16. Finer L, Zolna R (2014) Shifts in intended and unintended pregnancies in the united states, 2001–2008. American Journal of Public Health 104: S43-S48.

17. Hayford S, Guzzo K (2010) Age, relationship status and the planning status of births. Demographic Research 23: 365-398.

18. Martinez G, Chandra A, Abma J, Jones J, Mosher W (2006) Fertility, contraception, and fatherhood: data on men and women from cycle 6 (2002) of the 2002 national survey of family growth. Vital Health Statistics 23: 1-142.

19. Lee J, Burke A, Moreau C (2018) Female and male decision-making regarding whether to continue or abort an unintended pregnancy: A secondary analysis of the FECOND study. The European Journal of Contraception and Reproductive Health Care 23: 311-317.

20. Belcastro P (1983) A comparison of latent sexual behavior patterns between raped and never raped female victims. Victomology: An International Journal, 7: 224-230.

21. Belcastro P (1985) Sexual behavior differences between black and white students. Journal of Sex Research, 21: 56-67.

22. Belcastro P (2020) Reconciling Female Homoerotism in Sexual Orientation Paradigms. Reports on Global Health Research 3: 111.

23. Belcastro P Ramsaroop-Hansen H (2017) Addressing the antinomy between health education and health literacy in advancing personal health and public health outcomes. Journal of School Health 87: 968-974.

24. Mukherjee S, Edwards D, Baird D, Savitz D, Hartmann K (2013) Risk of miscarriage among black women and white women in a US prospective cohort study. American Journal of Epidemiology 177: 1271–1278.