

# Postabortion Contraceptive Use and Continuation When Long-Acting Reversible Contraception Is Free

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**OBJECTIVE:** To compare preference for long-acting contraception (LARC) and subsequent use, year-long continuation, and pregnancy among women after induced abortion who were and were not eligible to participate in a specialized funding program that provided LARC at no cost.

**METHODS:** Between October 2014 and March 2016, we conducted a prospective study of abortion patients at Planned Parenthood in Austin, Texas (located in Travis County). We compared our primary outcome of interest, postabortion LARC use, among women who were eligible for the specialized funding program (low-income, uninsured, Travis County residents) and two groups who were ineligible (low-income, uninsured, non-Travis County

residents, and higher income or insured women). Secondary outcomes of interest included preabortion preference for LARC and 1-year continuation and pregnancy rates among the three groups.

**RESULTS:** Among 518 women, preabortion preference for LARC was high among all three groups (low-income eligible: 64% [91/143]; low-income ineligible: 44% [49/112]; and higher income 55% [146/263]). However, low-income eligible participants were more likely to receive LARC (65% [93/143] compared with 5% [6/112] and 24% [62/263], respectively,  $P < .05$ ). Specifically, after adjusting for age, race-ethnicity, and education, low-income eligible participants had a 10-fold greater incidence of receiving postabortion LARC compared with low-income ineligible participants (incidence rate ratio 10.13, 95% confidence interval [CI] 4.68–21.91). Among low-income eligible and higher income women who received postabortion LARC, 1-year continuation was 90% (95% CI 82–97%) and 86% (95% CI 76–97%), respectively. One-year pregnancy risk was higher among low-income ineligible than low-income eligible women (hazard ratio 3.28, 95% CI 1.15–9.31).

**CONCLUSION:** Preference for postabortion LARC was high among all three eligibility groups, yet women with access to no-cost LARC were more likely to use and continue these methods. Low-income ineligible women were far more likely to use less effective contraception and become pregnant. Specialized funding programs can play an important role in immediate postabortion contraceptive provision, particularly in settings where state funding is limited.

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Each author has indicated that he or she has met the journal's requirements for authorship.

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satisfaction.<sup>2-4</sup> Moreover, compared with women using other postabortion contraception, those choosing LARC have lower repeat abortion rates.<sup>5-7</sup>

However, the high upfront costs of LARC often prevent clinics from providing them immediately postabortion and serve as a barrier to women desiring these methods.<sup>8-13</sup> When the cost of LARC is waived or subsidized, both women who have<sup>14</sup> and have not<sup>15-17</sup> recently had an abortion often choose these methods, yet no studies have isolated the effect of cost by directly comparing postabortion LARC use among women who can and cannot obtain these methods for free.

Our study takes advantage of a specialized county-based funding program offering no-cost LARC to uninsured, low-income women. Recent Texas legislation has resulted in significant reductions of state family planning funds<sup>18,19</sup> and abortion facilities.<sup>20</sup> Thus, many women have limited access to contraception and must travel cross-county to obtain abortion care. In this unusual setting, we were able to prospectively evaluate a natural experiment comparing women who had access to immediate postabortion no-cost LARC (Travis County residents) with women who were ineligible for the program (residents of other counties). Our objectives were to evaluate: 1) preabortion contraceptive preference for LARC, 2) immediate postabortion LARC use and 1-year continuation, 3) contraceptive use among non-LARC users in the year after abortion, and 4) pregnancy risk in this period according to eligibility for the funding program.

## MATERIALS AND METHODS

Medicaid 1115 waiver programs use a combination of local and federal funds to pay for innovative and cost-effective health care programs for low-income, uninsured populations. In 2014, a multi-institution health delivery system in Travis County (located in south-central Texas and encompassing Austin) began using 1115 waiver funding to completely subsidize LARC for low-income women in a program we refer to as the LARC Access Program. Eligibility for the LARC Access Program was restricted to uninsured Travis County residents with household incomes less than 200% of the federal poverty level (from here on referred to as low-income eligible). Ineligible participants were divided into two categories: 1) low-income, uninsured, women who did not live in Travis County (referred to as low-income ineligible); and 2) higher income or insured women (referred to as higher income).

Between October 2014 and March 2015, we recruited women seeking abortion care from Planned

Parenthood of Greater Texas in Austin to participate in this prospective study. The study site was the only facility in Travis County with the ability to provide immediate postabortion no-cost LARC under the LARC Access Program. Study participants were 18–44 years old, stated a desire to use contraception after their abortion, did not intend to become pregnant for at least the next year, and spoke English or Spanish.

Each participant received standardized, comprehensive contraceptive counseling before her abortion as described in the literature.<sup>21</sup> Using a tiered-effectiveness model,<sup>22</sup> unbiased information about the effectiveness, advantages, and disadvantages of each reversible method was provided. Cost was discussed after a method was chosen or sooner if brought up by the patient. Low-income eligible participants were told about the availability of immediate postabortion LARC free of charge. Program-ineligible participants were also counseled about the immediate availability of these methods at a cost of \$952 for the levonorgestrel IUD (Mirena), \$636 for the copper IUD (Paragard), and \$985 for the etonogestrel implant (Nexplanon). When requested, LARC methods were placed immediately postabortion for those who were eligible for the LARC Access Program, had insurance coverage, or had the ability to cover the unsubsidized cost. For those requesting other methods, the contraceptive injection was administered on the day of the abortion procedure at a cost of \$87 or a 1-month supply and prescription for oral contraceptive pills, the contraceptive patch, or the vaginal ring were provided. Otherwise, patients were offered male condoms and emergency contraception if desired.

After providing informed consent, study participants completed a baseline structured survey before their abortion. Despite attempts to recruit participants before contraceptive counseling, logistic constraints often precluded this. The baseline survey included questions about demographic characteristics and obstetric history. Preabortion contraceptive preference was assessed with the survey question; “If you could use any birth control method you wanted, which method would you be most interested in using after your abortion?” Response options included all hormonal and nonhormonal methods and an option of “no method.” Participants were then asked about the main reason for their interest in that method. Participants who would not consider using LARC were asked about the primary reason for that response.

Data were electronically entered into REDCap, an online data collection tool, using an iPad by the study participant or by a trained bilingual interviewer



depending on participant preference. Data on the contraceptive method provided to each study participant either immediately postabortion or at the 2-week follow-up visit were provided by the clinic's sole provider (A.D.) and also entered into REDCap.

For the follow-up telephone surveys, a trained interviewer read the structured survey questions and response options to each participant and then recorded the results in REDCap. Follow-up surveys were scheduled to occur between February 2015 and March 2016 at 4, 8, and 12 months after the baseline interview to assess continuation of the contraceptive method provided immediately postabortion, current contraceptive use, and repeat pregnancy. For those who could not be reached by telephone, text message, or using alternate contacts after several attempts, or for those who preferred to complete follow-up interviews by email, an identical structured follow-up survey was sent to the email address provided by the participant through a secure, password-protected online link. Some participants were contacted multiple times before actually completing the survey. The distribution of follow-up surveys according to the time elapsed since the baseline interview ranged between 3 and 17 months.

Participants received \$10 for completing the baseline survey and \$15–20 for completing each of the three follow-up surveys. Institutional review board approval for this study was obtained from the University of Texas at Austin.

Power calculations indicated that a total sample size of 256 participants would be sufficient to detect a 20% difference in postabortion LARC use (based on an estimate of 45% postabortion LARC among low-income eligible participants and 25% for low-income ineligible participants) at an  $\alpha$  level of 0.05 and power of 0.9 for a two-tailed test. However, because we expected to enroll nearly as many high-income as low-income participants, we set our total target sample size at 500.

We assessed differences in baseline characteristics between low-income eligible and ineligible participants and among all three eligibility groups using *t* tests and one-way analysis of variance for age and  $\chi^2$  tests for race–ethnicity, parity, relationship status, education, previous abortion, contraceptive preferences, and postabortion contraceptive use. We used Poisson regression models with robust standard errors to assess whether any difference in LARC use between eligibility groups might have been the result of potential confounding variables (age, race–ethnicity, education, and preabortion contraceptive preferences).

The interval between follow-up and baseline surveys was calculated and then grouped as follows: 3–6, 7–10, and 11–14 months after baseline. Surveys completed 15 months or greater postabortion were excluded from the following analyses. For each follow-up interval, we used current status information from the follow-up surveys to calculate the proportion of participants who had immediate postabortion LARC placement and continued to use LARC. We also calculated the proportion of participants using a given contraceptive method to determine contraceptive method mix by eligibility group at successive points.

Finally, we used Cox proportional hazard models to estimate hazard ratios for risk of repeat pregnancy over the follow-up period among the three eligibility groups. All statistical analyses were performed using Stata 14.

## RESULTS

Of those approached to participate in the study, 50 declined, 101 had incomplete baseline interviews primarily because they were called to their appointment before survey completion, and 121 did not meet the eligibility criteria. In total, 518 women completed the baseline survey among whom 315 (61%) completed an interview at 3–6 months, 357 (69%) completed an interview at 7–10 months, and 375 (72%) completed an interview at 11–14 months.

Among the baseline study participants, 143 (28%) were low-income eligible, 112 (22%) were low-income ineligible, and 263 (51%) were higher income. We found no significant differences in age, relationship status, or previous abortion among the three LARC Access Program eligibility groups. However, low-income eligible participants were more likely to be Hispanic compared with the two ineligible groups. Higher income participants were less likely to have any living children compared with the two other groups. Also, low-income ineligible participants were less likely to have completed college or attended postgraduate education compared with the other two groups (Table 1).

The majority of participants reported a preabortion contraceptive preference for LARC use (Table 2). The most important reasons why participants stated a preference for LARC included not having to remember to use these methods regularly (25%), that they last several years (25%), and that they were very effective at preventing pregnancy (14%). Among those who would not consider using LARC, the most common reasons included discomfort about having a foreign body in place (34%), concerns about side effects (19%), and concerns about safety (8%).



**Table 1. Baseline Demographic Characteristics of Study Participants Seeking Abortion by Eligibility for the Long-Acting Reversible Contraception Access Program**

Characteristic	Total (N=518)	Low-Income Eligible (n=143)	Low-Income Ineligible (n=112)	P*	Higher Income (n=263)	P†
Age (y)	26.7±5.6	26.5±5.8	26.4±5.2	.84	26.9±5.7	.64
Parity						
0	273 (53)	73 (51)	43 (38)		157 (60)	
1	101 (19)	19 (13)	29 (26)		53 (20)	
2	86 (17)	32 (23)	27 (24)		27 (10)	
3 or more	58 (11)	19 (13)	13 (12)	.05	26 (10)	<.001
Race-ethnicity						
White	215 (42)	45 (31)	47 (42)		123 (47)	
Hispanic	176 (34)	65 (45)	39 (35)		72 (27)	
Black	65 (13)	18 (13)	14 (13)		33 (13)	
Other	62 (12)	15 (11)	12 (11)	.30	35 (13)	.005
Relationship status						
Single	129 (25)	38 (28)	27 (25)		64 (25)	
Relationship, not living together	157 (31)	44 (32)	38 (35)		75 (29)	
Cohabiting	126 (25)	39 (28)	21 (19)		66 (25)	
Married	61 (12)	9 (7)	15 (14)		37 (14)	
Separated, divorced, widowed	34 (7)	8 (6)	9 (8)	.19	17 (7)	.37
Education						
Less than high school	46 (9)	22 (15)	12 (11)		12 (5)	
High school	138 (27)	38 (27)	42 (38)		58 (22)	
Some college	224 (43)	55 (39)	51 (46)		118 (45)	
College or postgraduate	109 (21)	28 (20)	7 (6)	.006	74 (28)	<.001
Prior abortion	198 (38)	61 (43)	43 (38)	.49	94 (36)	.39

Data are mean±standard deviation or n (%) unless otherwise specified.

\* *t* test and  $\chi^2$  tests of independence comparing low-income eligible with low-income ineligible participants.

† Analysis of variance and  $\chi^2$  tests of independence comparing all three eligibility groups.

Low-income eligible participants with a preference for LARC were far more likely to receive postabortion LARC compared with low-income ineligible and higher income participants (Table 2). After adjusting for age, race-ethnicity, and education, low-income eligible participants had a 10-fold greater incidence of receiving postabortion LARC compared with low-income ineligible participants (incidence rate ratio 10.13, 95% confidence interval [CI] 4.68–21.91).

Continuation of LARC placed postabortion was high in the both low-income eligible group and high-income ineligible group. At 3–6 months, 94% (95% CI 88–101%) of low-income eligible and 91% (95% CI 82–100%) of higher income participants were still using the LARC method they received immediately postabortion. At 7–10 months postabortion, 93% (95% CI 87–99%) of low-income eligible and 87% (95% CI 77–96%) of higher income participants were still using LARC. By 11–14 months postabortion, continuation remained high and comparable between these two groups with 90% (95% CI 82–97%) and 86% (95% CI 76–97%) of low-income eligible and higher income participants, respectively, continuing to use LARC.

These high LARC continuation rates as well as the substantial variation in postabortion LARC use across eligibility groups are reflected in the mix of contraceptive methods used at the three durations (Fig. 1). Use of LARC among low-income ineligible participants remained steadily low at each follow-up interval, whereas use of less effective methods increased at each interval, mostly at the expense of short-term hormonal methods. Additionally, a higher proportion of low-income ineligible participants reported using no method of contraception at each follow-up interval compared with participants in the other two groups.

The risk of pregnancy over the follow-up period was significantly higher for low-income ineligible compared with eligible participants. The risk of pregnancy was also higher for the higher income group compared with the low-income eligible group, but not significantly so (Table 3).

## DISCUSSION

We observed far higher uptake of LARC immediately after abortion among low-income women eligible for



**Table 2. Preabortion Contraceptive Preference and Immediate Postabortion Contraceptive Use by Eligibility for the Long-Acting Reversible Contraception Access Program**

	Total (N=518)	Eligible (n=143)	Low-Income Ineligible (n=112)	<i>P</i> <sup>*</sup>	Higher Income (n=263)	<i>P</i> <sup>†</sup>
Preabortion contraceptive preference <sup>‡</sup>						
IUD	215 (42)	71 (50)	33 (29)		111 (42)	
Implant	71 (14)	20 (14)	16 (14)		35 (13)	
Injection	56 (11)	9 (6)	24 (21)		23 (9)	
Pills	87 (17)	23 (16)	20 (18)		44 (17)	
Patch or ring	21 (4)	3 (2)	7 (6)		11 (4)	
Condoms	14 (3)	4 (3)	2 (2)	.008	8 (3)	.06
Postabortion contraceptive use						
IUD	116 (22)	67 (47)	4 (4)		45 (19)	
Implant	45 (9)	26 (18)	2 (2)		17 (6)	
Injection	62 (12)	7 (5)	29 (26)		26 (10)	
Pills	187 (36)	27 (19)	54 (48)		106 (40)	
Patch or ring	30 (6)	4 (3)	8 (7)		18 (7)	
EC and condoms	77 (15)	12 (8)	14 (13)	<.001	51 (19)	<.001

IUD, Intrauterine device; EC, emergency contraception.

Data are n (%) unless otherwise specified.

\*  $\chi^2$  tests of independence comparing low-income eligible with low-income ineligible participants.

†  $\chi^2$  tests of independence comparing all three eligibility groups.

‡ No participants stated a preference for emergency contraception. Fewer than 1% each requested spermicide or barrier methods, fertility awareness-based methods or abstinence, or "other" methods. Two percent requested male or female sterilization. Six percent responded "don't know" when asked about their contraceptive preference.

the LARC Access Program than among low-income women ineligible for the program. Long-acting reversible contraception uptake was also greater among low-income eligible women than among high-income ineligible women who either had insurance or whose incomes exceeded 200% of the federal poverty level. These differences in uptake greatly exceeded the differences in stated preference for LARC, which was high across all three eligibility groups.

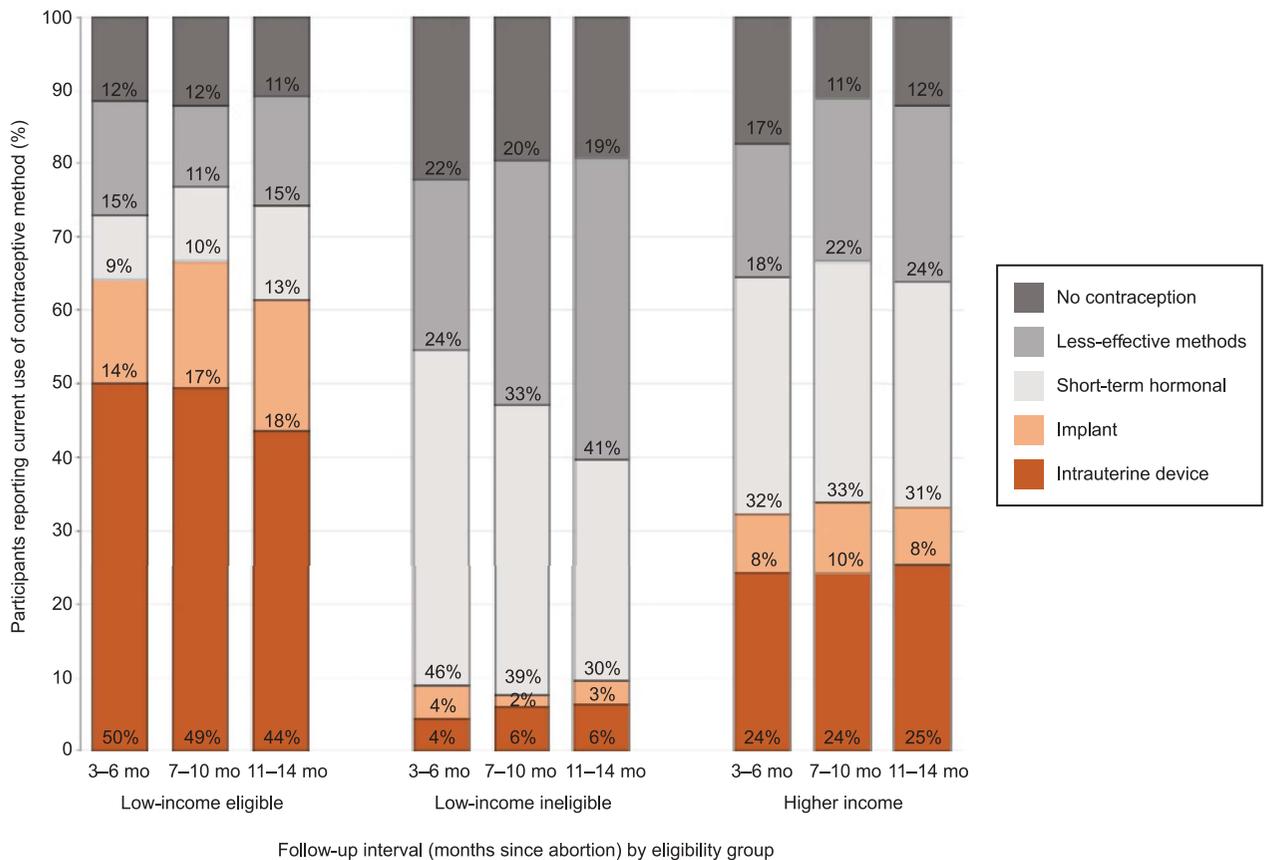
The differences in postabortion LARC uptake were reflected in LARC use throughout the year after induced abortion through high continuation rates. Overall, low-income eligible women used a more effective mix of contraceptive methods, especially in comparison with low-income ineligible women. The observed differences in method mix by eligibility group were, in turn, reflected in pregnancy rates during the year after abortion with low-income eligible women having significantly lower pregnancy rates than low-income ineligible women.

Our study was a natural rather than a randomized experiment. Although we did observe differences between the low-income eligible participants who resided in Travis County and those who were ineligible on account of living in another county, our multivariable analysis indicated that those differences did not have a substantial influence on LARC uptake. The difference between the two groups

resulted mainly from the likelihood of using LARC given a preference rather than from a difference in preference between the groups. Moreover, the somewhat smaller stated preference for LARC among low-income ineligible women might have resulted from a difference in counseling or perceived accessibility rather than a difference in underlying preference.

Our findings of increased LARC use among those who can obtain these methods without cost-sharing are consistent with prior work, although few data come from the abortion setting. A New Zealand study comparing 500 women at two time points, before and during an intervention when LARC fees were waived, demonstrated that postabortion IUD use increased from 26% (129/500) to 49% (243/500), respectively.<sup>14</sup> Similar findings have been shown in nonabortion settings. In a retrospective study evaluating contraceptive use 2 years before and after a Kaiser Foundation Health Plan in California policy change to include 100% universal coverage for the most effective methods, provision of cost-free LARC increased from 4,884 per 2,319,493 (0.2%) to 9,771 per 2,654,707 (0.4%) contraceptives procured.<sup>15</sup> In the Contraceptive CHOICE Project, where all contraceptive methods were offered free of charge to adolescents and women at risk for unintended pregnancy living in the St Louis, Missouri, region, 75% (6,928/9,256) of participants requested LARC.<sup>16</sup> Among privately insured women





**Fig. 1.** Current contraceptive use at time of follow-up interview among postabortion study participants by eligibility for the LARC Access Program. Chi-squared tests of independence comparing eligibility groups at each interval were significantly different,  $P < .001$ . Completed interviews among nonpregnant, unsterilized women at 3–6 months included 78 low-income eligible, 68 low-income ineligible, and 161 higher income participants. Completed interviews at 7–10 months included 99 low-income eligible, 66 low-income ineligible, and 192 higher income participants. Completed interviews at 11–14 months included 101 low-income eligible, 63 low-income ineligible, and 189 higher income participants. Sterilization was reported by two participants at 3–6 months, three participants at 7–10 months, and seven participants at 11–14 months. “Less effective methods” include barrier methods, withdrawal, spermicide, and fertility awareness–based methods. “Short-term hormonal methods” include oral contraceptive pills, transdermal patch, vaginal ring, and injection. LARC, long-acting reversible contraception.

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requesting IUD placement from a university hospital in Philadelphia, 54% (19/35) of those with out-of-pocket expenses less than \$50 had the device placed compared with 8% (5/60) who had out-of-pocket expenses of \$50 or more.<sup>23</sup>

Our study has several strengths. Because all women in this study were primarily presenting for abortion care and not solely seeking contraception, we were able to isolate the effect of cost on LARC use without potential selection bias resulting from a predetermined desire for LARC use. Another strength of our study is the high retention rate of participants, which is in line with the highest follow-up rates obtained in prospective studies of post-abortion patients.<sup>9,24</sup>

Despite these strengths, our study also has limitations. It is based on the experience of patients undergoing abortion at a single clinic, and our results cannot be generalized to all abortion facilities. Although cost is a significant barrier to provision of immediate postabortion LARC, other barriers include lack of sufficiently trained providers, limited array of available contraceptive methods, and inadequate contraceptive counseling.<sup>9,25</sup> All of these barriers were obviated in our study, but they may still prevent provision of desired postabortion LARC at other clinics, even if cost barriers are removed. Indeed, such barriers likely explain the lower use of LARC among high-income ineligible women, although our study did not assess barriers encountered in that group.



**Table 3. Risk of Pregnancy Over 1 Year Among Postabortion Study Participants by Eligibility for the Long-Acting Reversible Contraception Access Program\***

	n (%)	Unadjusted HR	95% CI
Low-income eligible	5 (4)	Referent	
Low-income ineligible	12 (11)	3.28	1.15–9.31
Higher income	18 (7)	1.82	0.68–4.91

HR, hazard ratio; CI, confidence interval.

\* Missing dates of conception for five participants were imputed based on the date of abortion, the date of the last interview completed when the participant was not pregnant, and the date of the interview in which pregnancy was reported. For example, if a participant reported that she was not pregnant during her 8-month interview and then reported that she was pregnant during the 12-month interview and failed to report the conception date, we imputed her conception date as occurring halfway between the dates of the 8- and 12-month interviews.

A larger question concerns the overall nature of the LARC Access Program. Providing a large subsidy for LARC methods may have created an incentive for LARC use greater than that which would arise from removing the cost barrier for all methods of contraception.

Our results do, however, indicate high demand for postabortion LARC among low-income, uninsured women. In states like Texas where abortion providers are prohibited from many funding programs,<sup>18,19</sup> uninsured low-income women who desire LARC postabortion are effectively excluded from accessing this method, leaving them at high risk for repeat unintended pregnancy.<sup>26</sup> Specialized funding programs such as the one evaluated in this study may play an important role in bridging the gap for these women.

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