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Predictors of delay in each step leading to an abortion☆

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Abstract

Background: Approximately 1 out of 10 abortions in the United States occurs in the second trimester of pregnancy. This study uses survival analysis to identify the factors which delay each step of the process of obtaining an abortion.

Study Design: This is a secondary data analysis of a cross-sectional study investigating a sample of 398 women who presented for elective abortion at an urban hospital. Respondents completed a survey using an audio-assisted self-interviewing program and provided a timeline for their process of obtaining an abortion.

Results: In our analysis, we divided the abortion process into three steps ending in three distinct events (first pregnancy test, calling a clinic, getting an abortion). Factors associated with delay during the first step include obesity [hazard ratio (HR) 0.8, 95% CI 0.6–1.0], abuse of drugs or alcohol (HR 0.7, 95% CI 0.6–1.0), prior second-trimester abortion (HR 0.6, 95% CI 0.4–0.8) and being unsure of last menstrual period (HR 0.6, 95% CI 0.4–0.7) and emotional factors such as being in denial (HR 0.8, 95% CI 0.6–1.0) and fear of abortion (HR 0.7, 95% CI 0.5–1.0).

Conclusion: This study identified key factors associated with delay in obtaining abortion care. Interventions which seek to address these factors, especially those factors associated with later pregnancy suspicion and testing, may reduce abortion delay and facilitate women obtaining their abortions when medical risk and overall cost are lower.

Keywords: Second-trimester abortion; Delay; Survival analysis

1. Introduction

Approximately 1 out of 10 abortions performed in the United States occurs in the second trimester, a proportion that has been relatively stable for the past decade [1]. Second-trimester abortions carry an increased incidence of complications and are more expensive than a first-trimester procedure [2,3]. These abortions are also increasingly difficult to obtain [4], and the general public is more likely to support restrictions which limit access to second-trimester abortion [5,6]. Consequently, investigating the factors that lead to delay in abortion care can guide the development of strategies that facilitate women obtaining their abortions earlier in pregnancy when both the medical risks and the costs are lower.

Two recent studies, which investigated delays in obtaining abortion care, have complementary findings. Drey et al. [7] used multivariable logistic regression to identify demographic and behavioral factors associated with seeking second-trimester abortions among 398 patients at a Northern California hospital-based abortion clinic. The study found that half of the time spent between first missed period and abortion occurs prior to the first pregnancy test. In addition, the study identified several factors that were significantly associated with having a second-trimester abortion, including having had a prior second-trimester abortion, difficulty locating a provider, uncertainty about the date of the last

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menstrual period, delay in obtaining state insurance and an initial referral elsewhere. A second study conducted by Finer et al. [8], gathered qualitative and quantitative data from 1209 abortion patients at 11 large providers in the nine major US geographic regions. The study investigated the demographic characteristics associated with a longer mean time to complete each step in the abortion process, from last menstrual period to obtaining an abortion procedure, and the characteristics associated with completing the process overall. The study found that women under the age of 18 years took longer than older women to acknowledge pregnancy symptoms and take a pregnancy test and that poor women were twice as likely as wealthier women to experience delays due to "making arrangements."

This article presents a secondary analysis of the Drey et al. [7] study. The Drey et al. study used multivariable logistic regression to identify factors associated with delay of abortion into the second trimester. Using hazard modeling, we can use the same data to understand the risk factors which are associated with delay within each of three steps — missed period to pregnancy test, from pregnancy test to making the first call to an abortion provider and from making the first call to obtaining the abortion for all women. Knowledge of factors associated with delay within each of these steps will add to our understanding of abortion delay and may suggest alternative strategies for reducing abortion delay overall.

2. Materials and methods

The objective of the delay study was to examine and report on factors associated with abortion delay among a cross-section of patients at the San Francisco General Hospital Women's Options Center. The center serves a local population of predominantly Latina and African-American women and accepts referrals from throughout Northern California. The center receives referrals for women in Northern California and out of state who are in their second-trimester and/or experiencing additional medical complications. The data were collected from September 2001 through March 2002 on women who presented to the Women's Options Center for an elective abortion and who were not seeking abortion for a known fetal anomaly. The original study was designed to examine risk factors associated with presenting for second-trimester abortion, compared to those associated with first-trimester abortion, so women were recruited equally in the first and second trimesters. In this study, "second trimester" is defined as the procedure occurring at or after 13 weeks from last menstrual period. Using an audio computer-assisted, self-interviewing program, we gathered information about the timing of menses, pregnancy symptoms, relationship details, social support, attitudes towards abortion and interactions with prior providers regarding this pregnancy [7]. With the assistance of a trained staff person and a calendar, study subjects were asked to recall the following dates: date they suspected pregnancy, date of first pregnancy test, date they decided to terminate the pregnancy, date they made the first call to an abortion provider, date they called the San Francisco General Hospital and date of the abortion procedure. A more detailed description of our survey instrument and protocol is provided elsewhere [7]. The study was approved by the University of California, San Francisco, CA, USA, Committee on Human Research, and informed consent was obtained from all subjects.

In our initial analysis, we assessed which factors were associated with abortion delay by comparing the characteristics of women who were in the first-trimester abortion group to those in the second-trimester abortion group. This article reports on a second analysis of the data-identifying factors that are associated with delay in each of three steps in the abortion process among both first- and second-trimester clients: (1) missed period to pregnancy test, (2) pregnancy test to making the first call to an abortion provider and (3) making the first call to receiving the abortion.

We reduced the timeline to these three steps because they occur sequentially, and each ends at a distinct event. The dependent hazard variable was the time taken to complete each step. In typical applications of survival analysis, a longer time to event is preferable as it indicates longer survival. In our results, a shorter time to event is *preferable* because it indicates an expedited time to abortion. For ease of interpretation, hazard ratios (HRs) can be thought of as velocity — the greater the HR, the faster a woman will arrive at the end of the step. Thus, an HR <1 indicates a slower time to compete a step, and an HR >1 indicates a faster time to complete a step.

3. Results

A total of 398 women participated in this study, with ages ranging from 15 to 46 years. The largest group of study participants were African-American (41%), followed by Latinas (25%), whites (16%) and Asians (11%). Participants who were in their second trimester (52%) slightly outnumbered those who were in their first trimester (48%). Table 1 shows the demographic characteristics of the study sample. More detail can be found elsewhere [7].

Among women in the study, several factors were significantly associated with delay in the first step (Table 2). First, having a body mass index in the obese range was associated with a longer time before pregnancy testing (HR 0.78, 95% CI 0.61–0.99). Symptoms of pregnancy such as nausea and vomiting (HR 1.30, 95% CI 1.00–1.68) and tiredness (HR 1.47, 95% CI 1.12–1.92) were associated with shorter intervals between last menstrual period and taking a pregnancy test. Being unsure of the date of the last menstrual period was significantly associated with delay in the first step (HR 0.57, 95% CI 0.44–0.74). Emotional and behavioral factors were also associated with delay of pregnancy suspicion

Table 1
Characteristics of study sample

Characteristic	Total (398)	Percentage (100)
Age, years		
15–19	101	25
20–29	202	51
30–46	95	24
Race/ethnicity		
African-American	162	41
Latina	101	25
White	62	16
Asian	45	11
Other	27	7
Location		
San Francisco	264	66
Bay area	99	25
Other	35	9
Income		
Household income <$20,000	134	34
Level of education		
<High school	122	31
High school	195	49
>High school	81	20
Trimester		
First trimester	191	48
Second trimester	207	52

and testing, including being afraid of an abortion (HR 0.73, 95% CI 0.54–0.99) and being in denial about pregnancy (HR 0.77, 95% CI 0.61–0.98). Abuse of drugs and alcohol (HR 0.74, 95% CI 0.55–0.99) and having a previous second-trimester abortion (HR 0.56, 95% CI 0.41–0.76) were also significantly associated with delay in the first step.

We found two significant factors which were associated with delay in the second step, between the first pregnancy test and the first phone call to a clinic. These factors included difficulty with getting MediCal, the state Medicaid program, that covers abortion care for low-income women to pay for the abortion, (HR 0.62, 95% CI 0.41–0.94) and difficulty with their decision to terminate this pregnancy (HR 0.64, 95% CI 0.49–0.82).

In our original analysis, we found that nearly a third (29%) of second-trimester women were still in the first trimester when they first called an abortion provider (the start of the third step). We found six factors which were associated with delay in this final step, between making the first call to an abortion provider to obtaining an abortion. These included having a prior second-trimester abortion (HR 0.71, 95% CI 0.54–0.95), an initial referral to another clinic (HR 0.60, 95% CI 0.47–0.78), an unsupportive partner (HR.71 95% CI 0.53,0.96) and difficulty financing an abortion (HR 0.5, 95% CI 0.57–0.98). Nausea and vomiting were associated with a shorter time in this third step (HR 1.32 95% CI 1.02,1.70). In addition, we found that once a decision was made to seek an abortion, women who reported "difficulty deciding" were significantly faster (HR 1.49, 95% CI 1.17–1.90) in the third step compared to women who did not report difficulty deciding.

In this secondary analysis, we have found that women, regardless of gestational age at the time of abortion, experienced the most delays in the first step of the abortion process. Some factors, which did not contribute to delay overall (e.g., obesity and difficulty financing an abortion), *did* contribute to delay within one or more steps in the abortion process.

4. Discussion

Examining the predictors of delay within each step toward obtaining an abortion can reveal important factors which may prevent women from accessing abortion services earlier when it is safer and less costly. If a factor is significant in delaying one step but insignificant in predicting overall delay, it may be because women who experience delay in one step make up the time in another period. This phenomenon was evident among women who reported difficulty deciding to have an abortion. Obesity, being in denial about the pregnancy and being afraid each show a significant association in the first interval but no association in slowing the overall time to abortion. There are several other explanations including low prevalence of the characteristic, and small study size as well as offsets in subsequent steps. Nevertheless, reducing delays in recognition and testing for pregnancy will reduce the overall need for second-trimester abortion services given the predominance of delay in this first step.

The significance of the association between previous second-trimester abortion and delay in the first and third step of the abortion process may indicate that this variable is picking up unobserved characteristics (e.g., high fecundity, complicated life circumstances, a lack of awareness of pregnancy symptoms or impairments in decision-making), that result in repeat second-trimester procedures. It is likely that the set of circumstances that led to a prior delayed abortion continue to persist at the time when a woman has another unintended pregnancy.

One limitation of our data is that the study design precludes the analysis of demographic characteristics of delay. The study design restricted the patient sample to an equal number of first- and second-trimester patients. The clientele for first-trimester procedures comes from the largely Latina and African-American population near the clinic while the clientele for second-trimester procedures draws from a greater area of Northern California which distorts demographic predictors of delay of abortion. Because our study sample is predominately residents of California, these data do not help us to understand the extent to which abortion regulation in other states may also contribute to delay of abortion care.

Our findings suggest that interventions which are aimed at improving women's ability to identify a pregnancy at an earlier gestation could be helpful in facilitating women obtaining abortions earlier in their pregnancy. Research and interventions which focus on understanding and eliminating

Table 2
Hazards associated with delay in steps to obtaining an abortion

	Total time to abortion	Step 1: missed period to test	Step 2: pregnancy test to first call	Step 3: first call to abortion
Reproductive/medical				
No children	0.98 (0.75–1.27)	0.90 (0.68–1.19)	1.08 (0.82–1.41)	0.95 (0.74–1.22)
Prior abortion	1.41 (1.05–1.89)	1.18 (0.89–1.57)	1.33 (0.98–1.79)	1.16 (0.88–1.54)
Prior 2nd-trimester abortion	0.49 (0.37–0.67)	0.56 (0.41–0.76)	0.75 (0.55–1.02)	0.71 (0.54–0.95)
Abuse of drugs or alcohol	0.73 (0.55–0.97)	0.74 (0.55–0.99)	0.90 (0.67–1.21)	1.18 (0.89–1.55)
Obesity/overweight	0.91 (0.72–1.15)	0.78 (0.61–0.99)	1.03 (0.80–1.33)	1.17 (0.93–1.48)
Using contraception	1.23 (0.96–1.56)	1.06 (0.82–1.36)		
Pregnancy symptoms				
Nausea/vomiting	1.49 (1.14–1.94)	1.30 (1.00–1.68)	0.84 (0.64–1.12)	1.32 (1.02–1.70)
Tiredness	1.35 (1.03–1.77)	1.47 (1.12–1.92)	1.12 (0.83–1.50)	0.89 (0.68–1.16)
Menstrual characteristics				
Periods irregular	1.25 (0.95–1.66)	0.92 (0.69–1.23)		
Unsure last menstrual period	0.71 (0.56–0.91)	0.57 (0.44–0.74)	1.08 (0.84–1.37)	1.07 (0.84–1.35)
Spotting/bleeding	1.05 (0.81–1.36)	0.91 (0.70–1.19)		
Logistical/financial factors				
Initially referred to other clinics	0.53 (0.41–0.69)		1.04 (0.79–1.36)	0.60 (0.47–0.78)
Difficulty locating provider	0.75 (0.60–0.95)		0.94 (0.74–1.19)	0.86 (0.69–1.08)
Traveled >2 h	0.97 (0.63–1.47)		0.96 (0.60–1.51)	0.86 (0.57–1.29)
Difficulty with transportation	0.99 (0.73–1.35)		1.19 (0.86–1.66)	0.80 (0.59–1.10)
Difficulty with getting MediCal to pay for the abortion	0.82 (0.55–1.21)		0.62 (0.41–0.94)	0.94 (0.64–1.37)
Difficulty financing abortion	1.04 (0.79–1.36)		0.89 (0.68–1.19)	0.75 (0.57–0.98)
Emotional factors				
Feeling sad or depressed	1.00 (0.77–1.29)	0.91 (0.69–1.18)	1.14 (0.87–1.48)	1.11 (0.86–1.43)
In denial that pregnant	0.86 (0.68–1.08)	0.77 (0.61–0.98)	1.02 (0.80–1.29)	1.15 (0.92–1.44)
Difficulty deciding	1.04 (0.81–1.33)	1.16 (0.90–1.48)	0.64 (0.49–0.82)	1.49 (1.17–1.90)
Afraid of abortion	0.82 (0.62–1.10)	0.73 (0.54–0.99)	0.91 (0.67–1.23)	1.11 (0.84–1.47)
Felt abortion morally wrong	0.80 (0.63–1.02)	0.85 (0.65–1.11)	1.20 (0.93–1.55)	0.84 (0.66–1.07)
Moderately/very religious	1.14 (0.90–1.44)	1.16 (0.90–1.50)	1.09 (0.85–1.40)	1.10 (0.86–1.39)
Interpersonal factors				
Unsupportive partner	1.00 (0.74–1.35)	0.90 (0.66–1.24)	1.20 (0.86–1.67)	0.71 (0.53–0.96)
Unsupportive family or friends	1.20 (0.92–1.56)	1.13 (0.86–1.48)	1.09 (0.82–1.43)	1.07 (0.83–1.38)

Results are reported as HR (95% CI). Models are adjusted for age, ethnicity, income, education, marital status, parity and insurance. HRs <1 indicates longer delay. HR >1 indicates shorter time to abortion.
HR >1 indicates shorter time. HR <1 indicates longer time to complete step.

"menstrual ambivalence" or the "denial" factor could be instrumental in reducing delay between last menstrual period and first pregnancy test. For example, if women's delay in obtaining a test is related to cost or unwillingness to seek a test at either a clinic or a crisis pregnancy center, an intervention could focus on free pregnancy tests for home use. However, if women lack understanding of the menstrual cycle itself, then the intervention might focus on an education campaign regarding pregnancy identification.

For women in our study, we found that "difficulty with getting MediCal to pay for the abortion" was significantly associated with delay during the second step of the abortion process. Several factors may contribute to difficulty with getting MediCal to pay for the abortion including women's lack of knowledge about available coverage, difficulty negotiating the MediCal application process or difficulty locating an abortion provider that accepts the MediCal payment. Although the state Medicaid program covers abortion care for poor women, not all providers accept that coverage and even those who accept MediCal do not accept it for abortions at all gestational durations. California is unusual in its public funding of abortion. Thirty-seven states ban Medicaid funding for abortion unless the pregnancy is a result of rape or incest or poses a risk to the woman's life. Medicaid-eligible women in other states could face longer delays as they seek to finance their medical care with their own funds.

In the step between calling a provider and obtaining the abortion, many women report being delayed by financial factors. Reducing the delay related to an inability to pay could be carried out through interventions aimed at helping women finance their abortions. These interventions may include grassroots efforts like expanding the network of abortion funds which currently provide support for low-income women or policy efforts like working to increase private and public insurance coverage of abortion. A final intervention may be encouraging abortion clinics located in states where Medicaid covers abortion to accept Medicaid for abortions at all gestational durations.

In this secondary analysis, we have found that the longest step toward getting an abortion is recognizing and testing for pregnancy. Obesity, abuse of drugs or alcohol, prior second-trimester abortion, being unsure of last menstrual period, being in denial and fear of abortion are all associated with longer time to recognize and test for

pregnancy. Addressing these factors may reduce the need for second-trimester abortion.

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