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Timing the provision of a pregnancy decision-aid: Temporal patterns of preference for mode of birth during pregnancy

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ABSTRACT

Objective: To help identify the optimal timing for provision of pregnancy decision-aids, this paper examines temporal patterns in women's preference for mode of birth after previous cesarean, prior to a decision-aid intervention.
Methods: Pregnant women ($n = 212$) with one prior cesarean responded to surveys regarding their preference for elective repeat cesarean delivery (ERCD) or trial of labor (TOL) at 12–18 weeks and again at 28 weeks gestation. Patterns of adherence or change in preference were examined.
Results: Women's preferences for birth were not set in early pregnancy. There was evidence of increasing uncertainty about preferred mode of birth during the first two trimesters of pregnancy (McNemar value = 4.41, $p = 0.04$), decrease in preference for TOL (McNemar value = 3.79, $p = 0.05$) and stability in preference for ERCD (McNemar value = 0.31, $p = 0.58$). Adherence to early pregnancy choice was associated with previous birth experience, maternal country of birth, emotional state and hospital site.
Conclusion: Women's growing uncertainty about mode of birth prior to 28 weeks indicates potential readiness for a decision-aid earlier in pregnancy.
Practice implications: Pregnancy decision-aids affecting mode of birth could be provided early in pregnancy to increase women's opportunity to improve knowledge, clarify personal values and reduce decision uncertainty.

1. Introduction

Significant decision dilemmas are created for women who experience primary cesarean delivery and then plan future pregnancies [1]. Most of the 1.3 million women in the United States (US) who experience cesarean surgery each year [2] will need individualized decision support from their providers as they make decisions about mode of birth in future pregnancies. Weighing the pros and cons of attempting vaginal birth after cesarean (VBAC) versus elective repeat cesarean delivery (ERCD) is not only medically complex but also many non-medical factors play a role in what has become a controversial and value-laden decision [1,3].

As the potential value of shared decision making (SDM) in healthcare has been increasingly recognized [4–9], decision-aids have been developed to support patients in an ever growing range of healthcare decision scenarios. Evidence demonstrates that SDM can improve health outcomes, increase satisfaction, improve knowledge about individual health status and improve adherence to treatment decisions [5,6]. Decision-aids have demonstrated efficacy in various scenarios during pregnancy [10–16] and the need for research to identify effective strategies for implementation in clinical practice has come into focus, specifically with the choice of birth after cesarean [17]. The 2010 NIH Consensus development conference about VBAC highlighted the importance of women being supported in their role as they share decisions about mode of birth with providers [1,17]. Evidence that safe VBAC can be achieved by many women has been well established [17,18], yet since the 2010 conference, little has changed in terms of rates of VBAC, which still remain at less than 10% nationwide [2]. This is a decision scenario where many US women are not given a choice, even though benefits could be achieved with successful implementation of shared decision making (SDM). As legislation is being drafted to mandate the use of decision-aids and SDM in practice [9], researchers are working to gather evidence about the most effective ways to move decision-aids from research to patient care.

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Pregnancy is a unique time in life for decision making and issues around many childbirth scenarios are value-laden. Unlike most other healthcare decision-aids, pregnancy decision-aids address decisions that affect more than one person. The very nature of the mother–baby dyad challenges women and providers as they weigh the pros and cons of decisions and balance the health of mother and baby within a limited timeframe. When decision-aids are applied to the context of pregnancy, there is a clearly defined period, with an approximate maximum of 42 weeks for shared decisions to occur. If the decision scenario is about planning the method of birth, the window of opportunity may be even narrower.

Decision-aid trials during pregnancy have been pragmatic in their timing of interventions to ensure women receive either booklets or access to computer tools [16]. Clinical trial protocols are based on a necessary balance between compliance with clinical guidelines, timing of routine patient visits to clinics and issues to support greater adherence to the intervention. As we move toward integrating decision-aids into clinical practice outside clinical trial protocols, we need to gather evidence about the optimal time to administer decision-aids to achieve the best effect.

When is the best time for decision-aids to be used during pregnancy, once clinical risk factors have been assessed and both eligibility and necessity to choose between various options has been established? To answer this question, we need to examine women's decision making across the pregnancy continuum, using a scenario where there is no 'best option' for women, where a choice must be made about mode of birth and where values influence preferences.

The ideal time is yet to be identified for pregnant women to receive information about their options for birth after previous cesarean. A recent Cochrane review of interventions to support women making decisions about birth after cesarean [16] highlighted that ideal timing of interventions has not yet been established. We believe that the present paper is the first study to empirically examine women's preference for TOL versus ERCD at different temporal points of pregnancy. Therefore the aim of this study was to determine the extent to which women's preference for mode of birth settle or change between early pregnancy and 28 weeks gestation and to assess the potential benefit of timing decision-aid interventions earlier in pregnancy.

2. Methods

2.1. Participants

A total of 227 women were enrolled in a prospective RCT to assess the effectiveness of a decision-aid [10]. Women were recruited at 12–18 weeks of pregnancy if they were medically eligible to choose between TOL and ERCD [10]. Women were randomized to receive either a decision-aid booklet about *Birth Choices* after cesarean at 28 weeks (n = 115) or usual antenatal care (n = 112) [10]. Participants were blinded to their study allocation but were expecting to receive information during pregnancy as part of their routine care. The detailed study protocol and results regarding decision-aid effectiveness are reported elsewhere [10]. The RCT took place in Australia between May 2001 and 2003 and involved two area health services within New South Wales. Approval for the original RCT was obtained from the human research ethics committees of affiliated universities and participating hospitals. The retrospective analysis of data for this study was granted IRB exemption under 45 CFR 46.101(b) (4) by Yale University Human Subjects Committee.

This study is a secondary analysis of prospective self-administered survey data, collected from 212 women who completed both Survey 1 (12–18 weeks) and Survey 2 (28 weeks) prior to the decision-aid being provided to women allocated to the intervention group. Women were included in this analysis if they indicated a preference for mode of birth at both survey points. Table 1 provides a summary of participant characteristics considered in the analysis. These included age, level of education, employment status, country of birth and previous birth experiences, in addition to relevant baseline factors that were thought to potentially influence patterns of birth preference (e.g. 15-item knowledge of birth options test, early pregnancy 6-item State Trait Anxiety Inventory (STAI) and baseline depression score using the Edinburgh Depression Scale (EPDS)).

Table 1
Characteristics of participants who completed Surveys 1 and 2 (n = 212).

Characteristic	Total		
	Category	Number	% (mean)
Age		212	(31.9)
Previous CS	Elective	57	26.9
	Emergency	155	73.1
Previous CS problems	Yes	82	38.7
	No	130	61.3
Previous vaginal birth	Yes	26	12.4
	No	183	87.6
RCT randomization	Decision-aid	109	51.4
	Control	103	48.6
Study site	Area Health 1	145	68.4
	Area Health 2	67	31.6
Birthplace	Australia	135	66.5
	Other	68	33.5
EPDS baseline	Less than 9	145	69.0
	9–12	47	22.4
	13+	18	8.6
Stait/trait anxiety	Low	136	69.4
	Medium	42	21.4
	High	18	9.2
Mode of pregnancy care	Midwives clinic	64	30.2
	Team midwifery	28	13.2
	Doctor shared care	66	31.1
	Doctors clinic	9	4.2
	Private obstetrician	45	21.2
Level of education	High School	58	27.4
	Diploma/certificate	70	33.0
	Degree+	84	39.6
Employment	Home duties	95	44.8
	Part time	76	35.8
	Full time	29	13.7
	Other	12	5.7
Knowledge score/15		212	(8.8)

Characteristics may not sum to 212 due to missing data on some variables.
Figures in parentheses represent means.
CS, cesarean section; EPDS, Edinburgh postnatal depression score.
Stait/trait anxiety categories were constructed using Auerbach approach [21].

2.2. Design and analysis

The research questions guiding the design and analysis were: (a) what mode of birth did women prefer during early pregnancy (Survey 1) and did the preference change mid-pregnancy (Survey 2); (b) what factors influenced adherence or otherwise to Survey 1 and Survey 2 birth preference?

As women were blinded to their study allocation we are able to firstly describe the exogenous evolution of women's birthmode preferences over the gestational period between Survey 1 and Survey 2. This was the critical period of time before the decision-aid was given to the intervention group, at 28 weeks. The patterns