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## Midwifery care and patient-provider communication in maternity decisions

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### Abstract

**Objective**—To characterize reasons women chose midwives as prenatal care providers and to measure the relationship between midwifery care and patient-provider communication in the U.S. context.

**Methods**—Retrospective analysis of data from a nationally-representative survey of women who gave birth in 2011–2012 to a single newborn in a U.S. hospital (n=2400). We used multivariate logistic regression models to characterize women who received prenatal care from a midwife, to describe the reasons for this choice, and to examine the association between midwife-led prenatal care and women's reports about communication.

**Results**—Preference for a female clinician and having a particular clinician assigned was associated with higher odds of midwifery care (AOR=2.65, 95% CI=1.70, 4.14 and AOR=1.63, 95% CI=1.04, 2.58). A woman with midwifery care had lower odds of reporting that she held back questions because her preference for care was different from her provider's recommendation (AOR=0.46, 95% CI=0.23, 0.89) or because she did not want to be perceived as difficult (AOR=0.48, 95% CI=0.28, 0.81). Women receiving midwifery care also had lower odds of reporting that the provider used medical words were hard for them to understand (AOR=0.58, 95% CI=0.37, 0.91) and not feeling encouraged to discuss all their concerns (AOR=0.54, 95% CI=0.34, 0.89).

**Conclusions**—Women whose prenatal care was provided by midwives report better communication compared with those cared for by other types of clinicians. Systems-level

interventions, such as assigning a clinician, may improve access to midwifery care and the associated improvements in patient-provider communication in maternity care.

### Keywords

midwifery; maternal health; communication; patient-centered care; patient choice

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### Introduction

Recent health care reforms and health care policy dialogues in the U.S. have focused on achieving transformation of health systems and care delivery in an effort to achieve 1) the “triple aim” of better outcomes and higher quality at lower costs, and 2) greater patient engagement and patient-centeredness in care. The three components of the triple aim are to improve individual outcomes and experiences in health care, to advance the quality of care at both individual and population levels, and to reduce per-capita costs of providing necessary health care services (1). While not an entirely new idea, the recent emphasis on patient-centered care highlights the importance of a patient’s participation in choices about their own health and care management as well as the importance of clinicians taking account of the values, preferences, and contextual life circumstances of patients in collaborative discussions to formulate plans of care (2,3).

The midwifery model of care aligns well with both the triple aim and the paradigm of patient-centered care. Similar to other maternity care providers, the American College of Nurse-Midwives philosophy of care includes providing a woman with full information, involving her in decisions about her care, and individualizing care to best meet her needs (4). American midwifery care is one example of a “working” maternity care model, based on criteria that include reducing morbidity as well as mortality, being woman-centered, and being financially viable (5). A systematic review comparing outcomes for midwife-led and other models of care confirms that health outcomes are similar to obstetrician-led care and identifies a focus on continuity of care and judicious use of medical interventions as key components of midwifery care across settings (6). Midwifery is associated with less frequent use of costly interventions when not medically necessary (6) and with greater patient satisfaction and involvement in care decisions (7,8). Midwifery-led care is also associated with lower rates of regional (i.e. epidural) analgesia, episiotomies, and instrumental births, and higher rates of continuity of care and women feeling in control during labor (6,9). Respecting the individuality of a woman's family and creating a setting that is appropriate to her needs are two central tenets of “exemplary” midwifery care (10).

In early U.S. history, midwifery occupied a prominent position in the care of women during pregnancy and childbirth; indeed, in the early 1900s midwives attended nearly half of all births in the nation (11). By 1950, however, midwives attended less than 10 percent of all births, and nearly 90 percent of births took place in hospitals (11). This trend has persisted, and today midwives attend just 8 percent of U.S. births (12), a figure that appears strikingly low, particularly since midwives are the primary care providers for pregnant women in many areas of the world. For example, midwives in Australia, Denmark, France, Sweden,

the Netherlands, New Zealand, and the United Kingdom attend more than 60 percent of births in their respective nations (13).

Many factors may account for these differences including the role of health insurance, clinical care systems, and provider networks, which may influence whether women have a choice of maternity care provider. Very little recent research has examined how women choose a provider for maternity care, but research on provider choice more generally suggests variability in whether patients seek out and compare information on multiple potential clinicians before making a choice (14,15). However, an active provider search may be more likely in pregnancy because the need for care is more predictably timed than, for example, an acute illness (16).

Having an established relationship with a physician and recommendations from members of one's social network appear to influence provider choice for many people (14), including the choice of facility for childbirth (17). More practical factors, such as appointment availability, insurance coverage, and the provider's healthcare plan affiliation, also influence these decisions (18,19).

Once women have chosen a provider for maternity care, the quality of that relationship is strongly influenced by communication (20,21). Published studies about communication and decision-making in maternity care have largely taken place in countries other than the U.S., where a far greater proportion of women are cared for by midwives. Thus, no prior U.S. studies explicitly compare communication and decision-making styles between midwifery-led care and physician-led care. Key facets of constructive communication in maternity care include an empathetic communication style, provider willingness to respond to questions, and allowing enough time to discuss the woman's concerns (22). Even within midwifery care, different models of care facilitate different styles of communication. Caseload care – where women are assigned to a single midwife or small group of midwives – was found to result in the woman asking more questions and longer visits, as well as enhanced patient choice and control (23). Researchers have stressed the importance of taking into account women's social context and potential vulnerability in maternity care decision-making (24). Decision aids may be helpful in increasing the patient's knowledge and reducing anxiety and uncertainty about decisions (25). Although not explicitly assessing the maternity context, a recent study in the U.S. indicated that patient-centered decision-making – using contextual factors in the patient's life to create an appropriate care plan – was associated with better management of diabetes and hypertension (3).

The aim of this study was to characterize access to midwifery care and reasons for choosing midwifery care among American women, and to measure the relationship between midwifery care and patient-provider communication in a maternity care context. We refer throughout the manuscript to decision factors under a woman's control as "personal" and those that are outside of her control as "systems" factors when discussing the issues that shape the choice of maternity care provider. Based on prior literature, we hypothesized that women who received care from a midwife would report greater involvement in decisions and better communication in during pregnancy and childbirth, compared with women who received care from other types of clinicians.

## Methods

### Data

Data for this analysis came from the Listening to Mothers III survey, a nationally-representative sample of women who gave birth to a singleton infant in a U.S. hospital between July 1, 2011 and June 30, 2012 ( $N=2,400$ ). Commissioned by Childbirth Connection and conducted by Harris Interactive, this survey comprehensively addressed the labor and birth experience, including women's views and choices about childbirth-related care and perceptions of the experience (19). Recent research using data from the Listening to Mothers surveys has examined various aspects of maternity care (26–32), but these data have not previously been used to examine midwifery care and patient-provider relationships and communication.

The data used in this analysis were de-identified existing records; the study was therefore granted exemption from review by the University of Minnesota Institutional Review Board (Study Number 1011E92983).

### Variable measurement

**Midwifery care and reasons for choosing a maternity care provider**—Midwifery care was assessed based on whether respondents reported having a midwife as their primary prenatal care provider. Women were asked to choose among several options, including an obstetrician-gynecologist, family medicine doctor, other doctor (not sure of specialty), midwife, nurse who is not a midwife, or physician assistant. The type or credential of midwife was not specified in the survey question; though since the study population was limited to hospital births, it is likely that women are referring predominantly to certified nurse-midwives. Independent variables included indicator variables for the woman's reported reasons for choosing a provider. We categorized these reasons as being personal or system factors. Personal reasons were: the provider had provided care in a previous pregnancy, was recommended by a friend or family member, was a good match for the respondent's values, or was female. System reasons were: the clinician provides well-woman care, was recommended by a health professional, was highly rated on a website, accepted the respondent's health insurance, attended births at a hospital that the respondent liked, or was assigned. When a specific provider was assigned or insurance options were limited, a woman may not have perceived a "choice," but we use that language to reflect the broad concept and question wording. Respondents could report each reason as a major factor, minor factor, or not a factor in choosing their provider. We coded each variable "yes" if it was listed as a major factor.

**Patient-provider communication**—The survey asked if respondents had never, once, or more than once held back a question for each of three possible reasons: the provider seemed rushed, the respondent "wanted maternity care that differed from what [the] maternity care provider recommended," or the respondent did not want the provider to think she was being difficult. We created a dichotomous measure for each reason for holding back questions, which were coded 0 for never and 1 for at least once.

The survey also asked how often the provider used medical words the respondent did not understand, spent enough time with the respondent, answered all questions to the respondent's satisfaction, and encouraged the respondent to discuss all her concerns. Response choices were never, sometimes, usually, or always. We reversed the coding for the positive indicators. For example, for a respondent who reported that a provider *always* "spent enough time" was coded as *never* on the new variable, "provider DID NOT spend enough time." We then created dichotomous measures for each communication problem, coded as 0 if the problem never occurred and 1 if it occurred sometimes, usually or always.

**Covariates**—Socio-demographic covariates were based on women's self-reports and included age, race/ethnicity (white, black, Hispanic, other/multiple race), education (high school or less, some college or Associate's degree, Bachelor's degree, graduate education/degree), 4-category census region, nativity (foreign- or U.S.-born), marital status (married or not), parity (first-time vs. experienced mother), pregnancy intention (unintended pregnancy or not). Additional covariates included agreement with the statement "birth is a process that should not be interfered with unless medically necessary," rating of the quality the US maternity care system (poor/fair, good, excellent), primary payer for maternity care (private, public, out-of-pocket), doula support during labor, whether the woman sought quality information to choose a maternity care provider, typical length of prenatal visit (0–15 minutes, 16–30 minutes, 31–45 minutes, more than 45 minutes), and prior cesarean delivery.

## Analysis

We first examined the descriptive statistics for the overall sample, using two-way tabulation to explore predictors, outcomes, and covariates. We used logistic regression to estimate the adjusted odds of midwife care, by reasons for choosing a provider and adjusting for covariates. We also used logistic regression to estimate the adjusted odds of each specific communication problem by midwifery care, controlling for reasons for choosing provider and all covariates. Because prior experience with childbirth is a strong predictor of future provider choices, we conducted sensitivity analyses stratified by parity and prior cesarean delivery, and results were broadly consistent, with a few exceptions noted herein where some findings were driven by multiparous women. All analyses were conducted using Stata v.12 and weighted to be nationally representative.

## Results

Table 1 reports characteristics of the study population by midwife as prenatal provider. About 8% of women in the sample had a midwife as their prenatal care provider. The other options were obstetrician (78%), family medicine doctor (8%), "a doctor but I'm not sure of his/her specialty" (3%), a physician assistant (1%), or "a nurse who is not a midwife" (2%). Those with midwifery care rated the quality of the U.S. maternity care system differently than women with other prenatal care providers. 70% of women with midwifery care were experienced mothers, vs. 58% of women with other prenatal care providers ( $p=0.024$ ). No other covariates examined differed significantly by prenatal provider type.

Reasons for choosing the prenatal provider and communication outcomes by midwife as prenatal provider are presented in Table 2. A larger percentage (66%) of women who had

midwifery care reported that having a female provider was a major reason for choosing their provider. In both groups, about 85% of women reported the provider accepting their health insurance as a major reason for their choice. Women with a midwife as their prenatal care provider reported several communication problems at lower rates. Only 14% of women with midwifery care reported holding back a question because they wanted different care, compared to nearly a quarter of women with other types of providers ( $p=0.008$ ). Smaller proportions of women with midwifery care than with other provider types reported that their provider used medical words they did not understand (40% vs. 54%), and that the provider did not encourage them to discuss all their questions and concerns (37% vs. 48%).

Adjusted odds for midwifery care by reasons for choosing a provider are shown in Table 3. After controlling for a range of factors, women citing the desire for a female clinician as a major factor in choosing a maternity care provider had more than double the odds of having a midwife for prenatal care (AOR=2.65, 95% CI=1.70, 4.14), compared with those for whom having a female clinician was not a major priority. Similarly, citing the fact that a particular clinician was assigned was associated with greater odds of midwifery care during the prenatal period (AOR=1.63, 95% CI=1.04, 2.58), compared with not having an assigned provider as a major decision factor. While not statistically significant at conventional levels, this analysis also showed that women who cited high ratings on a website as a major reason for choosing a maternity care provider were less likely to have a midwife as the prenatal care provider (AOR=0.64, 95% CI=0.38, 1.07), compared with a similar woman who did not state this as a major reason for their choice of provider ( $p=0.087$ ).

Table 4 presents logistic regression results for communication outcomes by midwifery care, adjusted for reasons for choosing the care provider and other socio-demographic and clinical covariates. Midwifery care was associated with lower chances of experiencing specific communication problems. Women with midwifery care had less than half the odds of reporting that they held back a question because they wanted different care than the provider was suggesting (AOR=0.46, 95% CI=0.23, 0.89) or because they did not want to be perceived as difficult (AOR=0.48, 95% CI=0.28, 0.81), compared to women with other provider types. Women receiving midwifery care also had about 40% lower odds of reporting that the provider used medical words were hard for them to understand (AOR=0.58, 95% CI=0.37, 0.91), feeling that their provider did not spend enough time with them (AOR=0.61, 95% CI=0.39, 0.96), and not feeling encouraged to discuss all their concerns (AOR=0.55, 95% CI=0.34, 0.89).

## Discussion

Women receiving midwifery care had statistically lower chances of experiencing problems in patient-provider communication, compared with women who received prenatal care from other clinicians. While these findings are consistent with prior research on midwifery care (7,8), the Listening to Mothers survey data allow us to provide a unique examination of specific types of communication problems that can arise in prenatal care. Our results showed that midwifery was associated with better communication across different dimensions, including various reasons women may be reticent to ask questions, use of medical terminology, and time pressure. Even after accounting for many of the personal, clinical, or

socio-demographic factors that may influence women's perception of communication, we found that women who received prenatal care from midwives were less likely to report that they withheld questions because they did not want to be perceived as "difficult" or because they had a preference for care that was different from what their provider was recommending. Additionally, women receiving care from midwives were less likely to say that their provider used medical terminology they did not understand, did not spend enough time with them, or did not encourage them to talk about all of their questions and concerns. In an era of increased attention to patient engagement in health care decisions, this finding is both important and actionable.

We also found that the reasons that women chose midwives included both personal and systems level factors, but the factors in this survey that had the strongest effect were a preference for a female provider, and – on the systems level – having an assigned provider. Women who wanted female providers or who had an assigned provider were more likely to see a midwife for prenatal care. In our sensitivity models stratified by parity, we found that the association between being assigned a provider and choosing midwifery care was largely driven by experienced mothers, while wanting a female provider was related to choosing a midwife regardless of parity. Interestingly, a predictor of midwifery in other settings internationally – belief that birth is a process not to be interfered with unless medically necessary – was not an independent predictor of midwifery care in this national sample of U.S. women, perhaps indicating a more constrained choice set for maternity care clinicians, limited by health insurance coverage, provider networks, and healthcare delivery systems. There are immediate and actionable steps that health care providers, payers, and systems administrators can take based on these findings to expand access to care associated with a higher degree of patient engagement and patient-provider communication.

We also found suggestive evidence that women for whom web-based quality or ratings data is a major reason for their choice of maternity provider are less likely to have a midwife (controlling for their specific socio-demographic and clinical characteristics). This implies that information about midwives and the quality of care they provide may either be presented less frequently or not at all to women who seek it. Pregnant women cite a range of sources of web-based information on maternity care including websites from hospitals, clinics, health care providers, health insurers or health plans, social media (including Facebook), news media, and blogs (19,33,34). Facilitating a stronger web presence for midwifery care could include greater use of marketing and attention to outreach and advertisement. In addition, broad efforts to improve maternity care quality measurement and data transparency ought to include information on midwifery as an integral part of this work (35). This is particularly important since midwifery care is not consistently recorded or reported in administrative data (36).

The assignment of a provider was identified as a facilitator of midwifery care, perhaps signaling an opportunity for health care delivery systems to consider collaborative care models that include midwifery or family physician care as the norm for routine, low-risk pregnancy care with referral systems to obstetricians or maternal fetal medicine specialists for complications that require higher acuity care (37,38). To meet the potential demand for such a model, policy makers could enhance the availability of midwifery services by

supporting the training of midwives in decisions related to federal appropriations for health provider education.

Although it provides valuable national data on patient-provider relationships and includes information about midwifery care, the survey data we used for this analysis have certain limitations that warrant discussion. These data are based on retrospective self-reports, leaving room for potential recall bias and social desirability bias. Although the survey contained information about communication from the perspective of a woman who gave birth, similar information was not available from clinicians and would be valuable for greater understanding of the relational dynamics between patients and providers in the maternity care context.

## Conclusions

Women who have a midwife as their prenatal care provider report fewer communications problems than women who had care from other types of clinicians, suggesting that this model of care results in better patient-clinician communication. Our analysis also revealed that factors under the control of the health care delivery system or payer, such as assigning a clinician and providing web-based ratings, can influence whether women receive care from midwives.

Midwifery is a care model with demonstrated effectiveness, satisfaction, and lower costs. It is consistent with the triple aim and is underutilized in the U.S., especially as it appears to support broader health care policy goals of increased patient engagement.

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## References

1. Berwick DM, Nolan TW, Whittington J. The triple aim: care, health, and cost. *Health Affairs*. 2008; 27:759–769. [PubMed: 18474969]
2. Barry MJ, Edman-Levitan S. Shared decision making -- the pinnacle of patient-centered care. *New England Journal of Medicine*. 2012; 366(9):780–781. [PubMed: 22375967]
3. Weiner SJ, Schwartz A, Sharma G, Binns-Calvey A, Ashley N, Kelly B, Dayal A, Patel S, Weaver FM, Harris I. Patient-Centered Decision Making and Health Care Outcomes. *Annals of Internal Medicine*. 2013; 158(8):573–580. [PubMed: 23588745]
4. American College of Nurse-Midwives. Our Philosophy of Care [Internet]. 2010 Available from: <http://www.midwife.org/Our-Philosophy-of-Care>.
5. Davis-Floyd, RE.; Barclay, L.; Tritten, J.; Daviss, B., editors. *Birth Models That Work*. University of California Press; 2009.
6. Sandall J, Soltani H, Gates S, Shennan A, Devane D. Midwife-led continuity models versus other models of care for childbearing women (Review). *Cochrane Database of Systematic Reviews*. 2013; (8)
7. Biró MA, Waldenström U, Brown S, Pannifex JH. Satisfaction with team midwifery care for low- and high-risk women: a randomized controlled trial. *Birth*. 2003; 30(1):1–10. [PubMed: 12581034]



8. Homer CSE, Davis GK, Cooke M, Barclay LM. Women's experiences of continuity of midwifery care in a randomised controlled trial in Australia. *Midwifery*. 2002; 18(2):102–112. [PubMed: 12139908]
9. Hatem M, Sandal IJ, Devane D, Soltani H, Gates S. Midwife-led versus other models of care for childbearing women (Review). *Cochrane Database of Systematic Reviews*. 2009; (3)
10. Kennedy HP. A model of exemplary midwifery practice: results of a Delphi study. *Journal of Midwifery and Women's Health*. 2000; 45(1):4–19.
11. Tovino SA. American Midwifery Litigation and State Legislative Preferences for Physician-Controlled Childbirth. *Cardozo Women's Law Journal*. 2004; 22:61–106.
12. Declercq E. Trends in midwife-attended births in the United States, 1989–2009. *Journal of Midwifery and Women's Health*. 2012; 57(4):321–326.
13. Malott AM, Davis BM, McDonald H, Hutton E. Midwifery care in eight industrialized countries: how does Canadian midwifery compare? *Journal of Obstetrics and Gynaecology Canada*. 2009; 31(10):974–979. [PubMed: 19941728]
14. Harris KM. How do patients choose physicians? Evidence from a national survey of enrollees in employment-related health plans. *Health Services Research*. 2003; 38(2):711–732. [PubMed: 12785569]
15. Victoor A, Delnoij DMJ, Friele RD, Rademakers JJ. Determinants of patient choice of healthcare providers: a scoping review. *BMC Health Services Research*. 2012; 12(1):272. [PubMed: 22913549]
16. Hoerger TJ, Howard LZ. Search behavior and choice of physician in the market for prenatal care. *Medical Care*. 1995; 33(4):332–349. [PubMed: 7731276]
17. Zelek B, Poole H. Home or away: factors affecting where women choose to give birth. *Canadian Family Physician*. 2007; 53(1):78–83.
18. Abraham J, Sick B, Anderson J, Berg A, Dehmer C, Tufano A. Selecting a provider: what factors influence patients' decision making? *Journal of Healthcare Management*. 2011; 56(2):99–114. [PubMed: 21495529]
19. Declercq, E.; Sakala, C.; Corry, M.; Applebaum, S.; Herrlich, A. *Listening to Mothers III: Pregnancy and Childbirth*. New York, NY: Childbirth Connection; 2013.
20. Rowe RE, Garcia J, Macfarlane AJ, Davidson LL. Improving communication between health professionals and women in maternity care: a structured review. *Health Expectations*. 2002; 5(1): 63–83. [PubMed: 11906542]
21. Stewart MA. Effective physician-patient communication and health outcomes: a review. *Canadian Medical Association Journal*. 1995; 152(9):1423–1433. [PubMed: 7728691]
22. Raine R, Cartwright M, Richens Y, Mahamed Z, Smith D. A qualitative study of women's experiences of communication in antenatal care: identifying areas for action. *Maternal and Child Health Journal*. 2010; 14(4):590–599. [PubMed: 19554436]
23. McCourt C. Supporting choice and control? Communication and interaction between midwives and women at the antenatal booking visit. *Social Science and Medicine*. 2006; 62(6):1307–1318. [PubMed: 16126316]
24. Noseworthy DA, Phibbs SR, Benn CA. Towards a relational model of decision-making in midwifery care. *Midwifery*. 2013; 29(7):e42–e48. [PubMed: 22877765]
25. Dugas M, Shorten A, Dubé E, Wassef M, Bujold E, Chaillet N. Decision aid tools to support women's decision making in pregnancy and birth: a systematic review and meta-analysis. *Social Science and Medicine*. 2012; 74(12):1968–1978. [PubMed: 22475401]
26. Jou J, Kozhimannil KB, Johnson PJ, Sakala C. Patient-perceived pressure from clinicians for labor induction and cesarean delivery: A population-based survey of U.S. women. *Health Services Research*. 2014 Sep 23. [Epub ahead of print].
27. Dagher RK, Hofferth SL, Lee Y. Maternal depression, pregnancy intention, and return to paid work after childbirth. *Women's Health Issues*. 2014; 24(3):e297–e303. [PubMed: 24794543]
28. Shepherd-Banigan M, Bell JF. Paid leave benefits among a national sample of working mothers with infants in the United States. *Maternal and Child Health Journal*. 2014; 18(1):286–295. [PubMed: 23584928]

29. Kozhimannil K, Attanasio L, Jou J, Joarnt L, Johnson P, Gjerdingen D. Potential benefits of increased access to doula support during childbirth. *American Journal of Managed Care*. 2014; 20(8):e340–e352. [PubMed: 25295797]
30. Kozhimannil KB, Jou J, Attanasio LB, Joarnt LK, McGovern P. Medically complex pregnancies and early breastfeeding behaviors: a retrospective analysis. *PLoS One*. 2014; 9(8):e104820. [PubMed: 25118976]
31. Attanasio LB, McPherson ME, Kozhimannil KB. Positive childbirth experiences in U.S. hospitals: a mixed methods analysis. *Maternal and Child Health Journal*. 2014; 18(5):1280–1290. [PubMed: 24072597]
32. Gjerdingen D, McGovern P, Attanasio L, Johnson PJ, Kozhimannil KB. Maternal depressive symptoms, employment, and social support. *Journal of the American Board of Family Medicine*. 2014; 27(1):87–96. [PubMed: 24390890]
33. McDaniel BT, Coyne SM, Holmes EK. New mothers and media use: associations between blogging, social networking, and maternal well-being. *Maternal and Child Health Journal*. 2012; 16(7):1509–1517. [PubMed: 22094592]
34. Bartholomew MK, Schoppe-Sullivan SJ, Glassman M, Kamp Dush CM, Sullivan JM. New Parents' Facebook Use at the Transition to Parenthood. *Family Relations*. 2012; 61(3):455–469. [PubMed: 23671354]
35. Angood PB, Armstrong EM, Ashton D, Burstin H, Corry MP, Delbanco SF, et al. Blueprint for Action Steps Toward a High-Quality, High-Value Maternity Care System. *Women's Health Issues*. 2010; 20(1S):18–49.
36. Diers D. Finding Midwifery in Administrative Data Systems. *Journal of Midwifery and Women's Health*. 2007; 52(2):98–105.
37. Shaw-Battista J, Fineberg A, Boehler B, Skubic B, Woolley D, Tilton Z. Obstetrician and Nurse-Midwife Collaboration. *Obstetrics and Gynecology*. 2011; 118(3):663–672. [PubMed: 21860298]
38. Avery MD, Montgomery O, Brandl-Salutz E. Essential components of successful collaborative maternity care models: the ACOG-ACNM project. *Obstetrics and Gynecology Clinics of North America*. 2012; 39(3):423–434. [PubMed: 22963701]

**Table 1**

Characteristics of study population by midwife as prenatal provider (N=2400).

	Midwife as prenatal provider		<i>p</i> value
	Yes	No	
	n=184	n=2216	
<i>Key covariates</i>			
Belief that childbirth is a process that should only be interfered with if medically necessary	67.8	57.6	0.053
Doula support	3.2	6.2	0.121
Quality of care in US maternity system			
Poor or fair	26.0	16.7	
Good	35.2	47.5	
Excellent	38.8	35.8	0.027*
Sought quality information	48.1	48.6	0.933
Primary payer for maternity care			
Private	45.3	46.8	
Public	47.7	46.5	
Out-of-pocket or missing	7.0	8.1	0.916
Length of prenatal appointments			
0–15 minutes	15.7	23.0	
16–30 minutes	48.2	44.4	
31–45 minutes	18.8	17.6	
More than 45 minutes	17.3	15.0	0.448
<i>Socio-demographic characteristics</i>			
Age category			
18–24	26.6	32.2	
25–29	37.3	27.6	
30–34	25.8	24.7	
35+	10.3	15.5	0.108
Race			
White	61.7	53.9	
Black	12.6	15.6	
Hispanic	16.9	23.7	
Other/multiple race	8.8	6.9	0.294
Marital status at time of birth			
Not married, no partner reported	8.1	7.9	
Unmarried with partner	23.2	32.3	
Married	68.7	59.8	0.230
Education			
H.S. or less	40.4	42.4	
Some college/Associate's degree	28.3	28.6	

	Midwife as prenatal provider		<i>p</i> value
	Yes	No	
	n=184	n=2216	
Bachelor's degree	15.2	18.1	
Graduate education/degree	16.0	11.0	0.363
Region			
Northeast	13.1	15.4	
Midwest	21.2	22.8	
South	36.2	40.0	
West	29.5	21.9	0.395
Foreign born (vs. US born)	9.6	6.8	0.362
Experienced mother (vs. first time mother)	69.6	58.4	0.024*
Unintended pregnancy (vs. intended pregnancy)	37.3	35.2	0.688

Note: Ns and percentages are weighted.

\* Significant with *p* value <0.05

**Table 2**

Unadjusted outcomes and reasons for choosing provider by midwife as prenatal provider (N=2400).

	Midwife as prenatal provider		<i>p</i> value
	Yes n=184	No n=2216	
<i>Reasons for choosing provider</i>			
Interpersonal			
Provided care in previous pregnancy			
No	28.0	21.8	
Yes	41.6	36.6	0.645
N/A (nulliparous)	--	--	
Recommended by friend/family member	39.8	44.6	0.384
Good match for values	67.2	69.3	0.682
Is female	65.6	47.5	<0.001*
System			
Highly rated on website	32.9	39.5	0.229
Provided well-woman care	52.6	60.2	0.149
Recommended by health professional	41.7	47.5	0.297
Accepts my health insurance	84.6	85.2	0.875
Attends births at a hospital I like	68.5	67.8	0.877
Was assigned to me	41.7	37.8	0.473
<i>Outcomes</i>			
Held back questions because...			
Felt rushed	24.3	30.1	0.248
Wanted different care	14.4	22.0	0.122
Didn't want to be difficult	14.0	24.1	0.008*
Communication problems that occurred at least once			
Provider used medical words you didn't understand	40.3	53.6	0.012*
Provider DID NOT spend enough time with you	48.1	57.2	0.087
Provider DID NOT answer all your questions	45.2	42.2	0.586
Provider DID NOT encourage you to talk about all questions and concerns	36.7	47.7	0.046*

Note: Ns and percentages are weighted.

\* Significant with *p* value <0.05

**Table 3**

Adjusted odds for midwifery care, by reasons for choosing provider and other covariates (N=2400).

	<b>AOR</b>	<b>95% CI</b>	<b>p value</b>
<i>Reasons for choosing provider</i>			
Interpersonal			
Provided care in previous pregnancy	0.97	0.52–1.82	0.924
Recommended by friend/family member	0.84	0.53–1.35	0.478
Good match for values	0.93	0.55–1.57	0.796
Is female	2.65	1.70–4.14	<0.001*
System			
Highly rated on website	0.64	0.38–1.07	0.087
Provided well-woman care	0.65	0.38–1.09	0.101
Recommended by health professional	0.79	0.51–1.21	0.279
Accepts my health insurance	0.79	0.40–1.55	0.490
Attends births at a hospital I like	1.22	0.76–1.94	0.405
Was assigned to me	1.63	1.04–2.58	0.035*

Model controls for birth attitudes, doula support, perceived quality of US maternity care, whether quality information was sought when choosing a provider, primary payer for maternity care, age, race/ethnicity, partnership status at the time of the birth, education level, census region, nativity, parity, unintended pregnancy, and prior cesarean.

\* Significant with *p* value <0.05

**Table 4**

Adjusted odds for communication outcomes, by midwifery care.

<i>Specific communication problems</i>	<b>Midwifery care</b>		
	<b>AOR</b>	<b>95% CI</b>	<b>p value</b>
Held back a question because felt rushed	0.65	0.38–1.10	0.108
Held back a question because wanted different care	0.46	0.23–0.89	0.022*
Held back a question because didn't want to be difficult	0.48	0.28–0.81	0.006*
Provider used medical words you didn't understand	0.58	0.37–0.91	0.017*
Provider did not spend enough time with you	0.61	0.39–0.96	0.032*
Provider did not answer all your questions to your satisfaction	1.11	0.70–1.74	0.663
Provider did not encourage you to talk about all your questions and concerns	0.54	0.34–0.89	0.016*

Models control for reasons for choosing prenatal care provider, birth attitudes, doula support, perceived quality of US maternity care, whether quality information was sought when choosing a provider, primary payer for maternity care, age, race/ethnicity, partnership status at the time of the birth, education level, census region, nativity, parity, unintended pregnancy, typical length of prenatal visits, and prior cesarean delivery.

\* Significant with  $p$  value <0.05