Understanding Consumer Perceptions and Awareness of Hospital-Based Maternity Care Quality Measures

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Objective. To explore factors that may influence use of comparative public reports for hospital maternity care.

Data sources. Four focus groups conducted in 2013 with 41 women and preintervention survey data collected in 2014 to 2015 from 245 pregnant women in North Carolina.

Study design. As part of a larger randomized controlled trial, we conducted qualitative formative research to develop an intervention that will be evaluated through pre- and postintervention surveys.

Data extraction methods. Analysis of focus group transcripts examined participants' perceptions of high-quality maternity care and the importance of different quality measures. Quantitative analysis included descriptive results of the preintervention survey and subgroup analyses to examine the impact of race, education, and being a first-time mom on outcomes.

Principal findings. When describing high-quality maternity care, participants focused on interactions with providers, including respect for preferences and communication. The importance of quality measures was influenced by the extent to which they focused on babies' health, were perceived as the hospital's responsibility, and were perceived as representing "standard care." At baseline, 28 percent of survey respondents had used quality information to choose a hospital. Survey respondents were more aware of some quality measures (e.g., breastfeeding support) than others (e.g., episiotomy rates).

Conclusions. Public reporting efforts could help increase relevance of maternity care quality measures by creating measures that reflect women's concerns, clearly explaining the hospital's role in supporting quality care, and showing how available quality measures can inform decisions about childbirth.

Key Words. Public reporting, maternity care, quality measurement, patient engagement, qualitative research

The Affordable Care Act of 2010 and recent initiatives to achieve the goals of better health, better health care, and lower costs have called for health system transformation, emphasizing measurement, quality improvement, transparency and public reporting of quality information, payment innovation, and patient engagement (Coulter 2012; James 2012; Hibbard and Greene 2013; Smith et al. 2013; Carman et al. 2014; Frosch et al. 2015). Publicly available quality reports provide an opportunity to engage consumers in taking an active role in choosing high-quality providers, appropriate care, and treatment options (Bardach, Hibbard, and Dudley 2011; Weiss 2012).

Maternity care has received specific attention for quality measurement and reporting (Kozhimannil 2014; Lally and Lewis 2014) because (1) childbirth is the most frequent cause of hospitalization in the United States, with nearly 4 million births per year (Martin, Hamilton, and Osterman 2014), (2) there is significant variation in obstetric care quality and health outcomes at the hospital level (Glance et al. 2014; Howell et al. 2014; Kozhimannil, Arcaya, and Subramamian 2014), (3) options for childbirth can be researched in advanced, and (4) maternity and newborn care are the single largest category of hospital payouts for commercial insurers and state Medicaid programs, with the cumulative costs per year totaling over \$5 billion (Rosenthal 2013). Public reports of hospital quality provide a viable opportunity to demonstrate how maternity care varies and how consumers can use hospital quality measures in making decisions for labor and delivery (Carter et al. 2010; Gee and Corry 2012). However, many current public reports of quality do not provide information to consumers in a timely or engaging fashion (Agency for Healthcare Research and Quality, 2011).

Many lessons have emerged from over 30 years of health care quality reporting efforts. Research indicates that consumers want information they can use to inform their choices of health plans and providers and are seeking rankings or reviews of physicians, hospitals, and other providers (Fox and Jones 2009; Pew Research Center, 2015). Moreover, various studies in controlled environments have demonstrated that when presented with well-displayed information on health care quality, consumers use it effectively to choose better-performing providers (Hibbard et al. 2002, 2013; Carman

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2006; Faber et al. 2009). Despite the increase in prevalence and interest of public quality reports, studies indicate that only a minority of Americans have seen information on health care quality (The Henry J. Kaiser Family Foundation, 2008). Furthermore, public reporting is more likely to be associated with changes in provider behaviors than with selection of providers by patients or families (Totten et al. 2012).

To truly engage consumers and increase the use of public quality reports, we need to examine the factors that lead to their optimal use. Effective access and use of quality information requires that consumers be aware of the information, understand the information being presented, find the information to be relevant to them, and receive the information in time to make a decision about their provider or their care (Shaller et al. 2003; Sofaer and Firminger 2005; Hibbard and Sofaer 2010; Sofaer and Hibbard 2010; Mittler et al. 2012; Yegian et al. 2013). The focus on maternity care quality reporting highlights the need to understand women's perspectives on these factors, so that public reports are ultimately designed to address their concerns and needs, resulting in better uptake. Although spouses or family members may use quality information, our research focuses on women's perspectives.

In this article, we explore factors that may influence use of comparative public reports for hospital maternity care, examining:

- How do women perceive and define maternity care quality?
- What information about maternity care quality do they value?
- How aware are they of current maternity care quality efforts and measures?
- What information would they be likely to use and under what circumstances?

METHODS

Study Design

The aim of this study was to develop an intervention to increase the use of maternity care hospital quality information by consumers. The intervention Web site reports hospital-level maternity care quality measures, supplemented with additional materials and tools that create linkages between maternity care quality measures and issues of importance to pregnant women. The impact of the intervention will be evaluated in a randomized controlled trial using pre- and postintervention surveys. As part of the study, we conducted formative

focus group research with women; developed and tested intervention materials with women and clinicians; and developed and cognitively tested pre- and postsurvey items with women.

This paper uses findings from two data sources—the focus groups with consumers and the preintervention survey—that focused on factors that may influence consumers' use of maternity care quality information. All data collection and analysis procedures were reviewed and approved by AIR's Institutional Review Board.

Qualitative Data Collection and Analysis

In April 2013, AIR conducted four 2-hour focus groups in Raleigh, NC. Two groups included women who were currently pregnant, one included women who were planning to get pregnant in the next year, and one included women who had given birth within the past year. All groups were in English. We excluded women who participated in a research study in the past 6 months or who worked in a health-related field. Participants received an incentive.

Topic areas focused on how participants describe high-quality maternity care, perceive the importance of different quality measures, and how and when they would use quality information. During the groups, participants also completed a rating exercise, in which they read a plain language explanation of a maternity care quality measure, rated how important the measure was to them, and indicated their belief about how likely different hospitals are to vary on the measure. Focus groups were audiorecorded and transcribed. The research team read the transcripts, creating summaries by topic area. The team then reviewed these summaries to identify patterns and themes both within and across groups. The team returned to the transcripts to verify and confirm emerging themes, search for contradictions and exceptions, and test alternate explanations (Miles and Huberman 1994; Devers 1999).

Quantitative Data Collection and Analysis

We recruited a total of 245 women in North Carolina using three local recruitment firms over a 7-month period from June 2014 to January 2015. Participants were 8–30 weeks pregnant, aged 18–44 years old, with a mix of education levels, race, and ethnicity. We recruited women who had given birth before and those who had not. They were required to have Internet access and an e-mail address. Because we included only hospital-level measures in our

study, we excluded women who planned on giving birth at a military hospital, birthing center, or at home.

We administered the survey in English using an Internet-based survey tool and offered an incentive for completion. Of the 252 women recruited, 245 completed the presurvey. Quantitative data analysis included descriptive results of the presurvey and subgroup analyses to examine the impact of race, education, and being a first-time mom on the presurvey outcomes. We conducted linear and logistic regression modeling with *SAS Proc GLM* and *Proc Logistic*¹ to examine the differences in outcomes between subgroups, while controlling for participants' age, ethnicity, health status, marital status, health insurance coverage, access to maternity care, income, and household size. Because the number of other race and Latina participants was small, we treated race as a dichotomous variable (White, African American) and did not examine the impact of Latina ethnicity. Data verification procedures were conducted, such as checks for out of range values.

Selection of Quality Measures

In the focus groups, we asked women about the importance of the nine maternity care hospital quality measures shown in Table 1. We selected these measures because, at the time of the focus groups, our understanding was that these measures would be publicly available through the Joint Commission's Health Care Quality Data Download (<http://www.health-carequalitydata.org/>) and Leapfrog Group (<http://www.leapfroggroup.org/cp>). However, Joint Commission did not make data publicly available for the NTSV C-section or health care-associated bloodstream infections in newborns measures. Likewise, Leapfrog Group decided not to report use of prophylactic antibiotics received within 1 hour prior to surgical incision—C-section. As these three quality measures could not be included in our intervention, the baseline survey asked about the six remaining measures.

PRINCIPAL FINDINGS

Study Sample

Table 2 shows the demographic characteristics of our study sample for the focus groups and baseline survey. In general, the samples were simi-

Table 1: Quality Measures Used in Focus Groups and Survey

Incidence of episiotomy*
The number of women who deliver vaginally who get an episiotomy [†] ; an episiotomy is a cut to widen the opening of a vagina during a vaginal delivery. Have you read or heard about hospitals trying to reduce the use of unnecessary episiotomies? [§]
Appropriate newborn bilirubin screening prior to discharge*
The number of babies who are tested for high bilirubin (when untreated, high bilirubin levels can cause serious illness or death). [‡] Have you read or heard about hospitals making sure to screen newborns for jaundice before they leave the hospital? [§]
Exclusive breast milk feeding in the hospital [†]
The number of babies who are only fed breast milk while they are in the hospital. [‡] Have you read or heard about hospitals trying to support the mother's choice to breastfeed? [§]
Early elective delivery (before 39 weeks) [†]
The number of babies whose delivery was purposely scheduled in weeks 37 and 38, before the baby is fully developed. [‡] Have you read or heard about hospitals trying to reduce the number of babies being scheduled for delivery before 39 weeks unless there is a medical problem? [§]
First-time, low-risk C-section (nulliparous, term, singleton, vertex, or NTSV) [†]
The number of low-risk, first-time mothers who deliver their baby by C-section [‡] ; measure not included in survey [§]
Use of prophylactic antibiotics received within one hour prior to surgical incision—C-section*
The number of women having a C-section who get antibiotics right before delivery [‡] ; measure not included in survey [§]
Appropriate deep venous thrombosis (DVT) prophylaxis in women undergoing C-section*
The number of women having a C-section who get treatments to prevent blood clots that can travel through their body. [‡] Have you read or heard about hospitals working to decrease the risk of blood clots in women who have C-sections? [§]
Use of antenatal steroids for babies at risk of delivering before 34 weeks [†]
The number of women expected to deliver too early who get medicine to improve their babies' development, especially their lungs. [‡] Have you read or heard about hospitals providing treatment to improve lung development in babies at risk of delivery before 34 weeks? [§]
Health care associated bloodstream infections in newborns (the number of staphylococcal and gram negative septicemias or bacteremias in high-risk newborns) [†]
The number of babies born too early who get a serious bacterial infection [‡] ; measure not included in survey [§]

*From The Leapfrog Group.

[†]From The Joint Commission.

[‡]Plain language label in formative research.

[§]Plain language label in baseline survey.

lar; however, respondents to the baseline survey were required to be pregnant. In addition, the survey sample pulled from a larger geographic region, had lower levels of education, and higher levels of public insurance. Overall, the sample was representative of North Carolina residents except for underrepresentation of Hispanic/Latina ethnicity (United States Census Bureau, 2015) and Medicaid recipients (Kaiser Family Foundation, 2015).

Table 2: Demographic Characteristics of the Sample

<i>Characteristics</i>	<i>Formative Focus Groups (n = 41)</i>	<i>Baseline Intervention Survey (n = 245)</i>
Age		
Range	19–42 years	18–44 years
Average	33.1 years	30.7 years
Education		
High school graduate or less	5 (12%)	30 (12%)
Some college/vocational graduate	7 (17%)	93 (38%)
College graduate	20 (49%)	81 (33%)
Post college	9 (22%)	41 (17%)
Race		
African American	8 (20%)	54 (22%)
American Indian or Alaska Native	0	2 (1%)
Asian	1 (2%)	2 (1%)
White	25 (61%)	174 (71%)
Biracial or multiracial	0	11 (4%)
Other	1 (2%)	5 (2%)
Ethnicity		
Hispanic/Latina	6 (15%)	15 (6%)
Health insurance		
Privately insured	39 (95%)	193 (79%)
Medicaid	1 (2%)	38 (16%)
Other	0	8 (3%)
None	1 (2%)	5 (2%)
Location		
Raleigh-Durham, NC, metro area	41 (100%)	143 (58%)
Charlotte, NC, metro area	0	99 (40%)
Greensboro, NC	0	3 (1%)
First child		
Yes	19 (46%)	106 (43%)
No	22 (54%)	139 (57%)
Pregnancy status		
Planning to get pregnant	11 (27%)	0
Currently pregnant	21 (51%)	245 (100%)
Gave birth in the past year	9 (22%)	0

FOCUS GROUPS

Perceptions of High-Quality Maternity Care

Focus group participants were asked what it meant to get high-quality maternity care, and alternatively, low-quality maternity care. When discussing maternity care, participants described a broad range of services, including pre-natal care, labor and delivery, and the recovery period in the hospital. Overall,

most discussion of quality focused on the interactions between the woman and her doctors or nurses; these characteristics included the following:

- *Providing individualized care that focuses on, and has respect for, each woman's health, needs, and personal preferences for labor, delivery, and breast-feeding.* For example, one participant said, "As long as it's ok for the baby and myself, I really want the choice to be able to do what I want to do." In contrast, low-quality care has a disregard for women's needs and preferences with one participant explaining, "An excessively high C-section rate, to me, is not focused on the mother; it's focused on getting people in and out of the hospital."
- *Timely and effective communication.* For instance, participants noted that the doctor "takes time to answer my questions" and "makes you feel comfortable." In contrast, poor communication would be rushed or not looking at a women's chart ahead of time. It would also include "not returning calls or taking 24 hours or longer to return a phone call."
- *Coordinating care needs before, during, and after delivery and across providers to better meet the needs of women and their babies.* For example, one participant said: "I was constantly bombarded with different people coming into the room. The nurses from the hospital, doctors from the hospital, doctors from the doctor's office, lactation consultant, photographer, who knocked on the door multiple times, and I just said 'no' multiple times. I mean, it was just one thing after another. People coming in to get blood work in the middle of the night. And repetitive, you know, a nurse from the hospital would come in and do an exam, and the doctor's office comes in and does an exam of the same thing."

Other aspects of high-quality care focused on characteristics of the hospital (ordered by frequency of mention):

- Providing education for the woman before and after birth through classes or training and information about options during delivery.
- Availability of lactation consultants.
- Having knowledgeable providers, including the "skill level of the nurses" or doctors "being up to date on the latest innovations and recommendations."
- Having physical space and support for family members, such as places for partners to sleep.
- Having updated equipment and technology.

- Providing financial counseling and support.
- Having clean facilities.

When we asked how they would know if they were receiving high- or low-quality care, participants did not appear to assess quality against a well-defined standard of care. The prevailing responses were that “you know it when you see it” and that women compare their experiences to what they have heard from friends and family.

Roles and Responsibility for Ensuring High-Quality Maternity Care

When asked what role patients, providers, and hospitals have in ensuring the quality of care, many focus group participants indicated that it was a shared responsibility. The overarching reaction was that a woman’s responsibility is to be informed, ask questions, and voice her preferences in situations where she has a choice. For example, one participant said: “If they’re making decisions and they’re not telling you something and you’re just there without saying anything or without speaking your mind, they’re going to continue doing whatever they want. You have to let them know what you want.”

Yet many participants stated that the doctor provides guidance and ultimately decides if a particular intervention is medically necessary. For example, a woman may prefer to deliver vaginally and voice that opinion, but the doctor may eventually decide to do a C-section for medical reasons. Many participants relied on their providers’ recommendations when they did not know what was best, and ultimately, placed a large amount of trust in their physicians to know when an intervention was medically appropriate. For instance, when talking about C-sections, one participant explained, “Doctors wouldn’t allow you to deliver by C-section unless there were health issues.”

Related, some participants talked about the role of a birth plan in helping them think through their preferences. However, not all participants agreed that a birth plan was an effective or sufficient step in the labor process. A few participants voiced the opinion that a birth plan helps a woman think through her options, but having someone to advocate for the woman’s wishes, such as her husband, partner, family member, or a doula, is key. If hospital staff are not supportive of the birth plan and no one advocates for it, then it can be easily pushed to the side when decisions must be made quickly.

Participants focused most on the role of patients and providers in high-quality care, not hospitals. When asked what responsibilities the hospital has, participants did not see hospitals as playing a large role in the quality of care beyond providing a clean facility, qualified staff, and access to birthing options and technology.

Perceptions of Maternity Care Quality Measures

After the discussion on high-quality maternity care, focus group participants read plain language explanations of measures, rating the importance and likely variation by hospital for each measure. Overall, participants were not familiar with the quality measures, but they still found the information important. Table 3 shows the number of participants who initially rated each measure as extremely important and very likely to vary by hospital. This activity was used as a stimulus for discussion; we did not ask participants to reconsider their ratings after the discussion.

Table 3: Initial Ratings of Maternity Care Quality Measures during Focus Groups: Importance and Variation, $n = 41$

Quality Measure	Rated as Extremely Important*	Rated as Very Likely to Vary by Hospital†
Health care associated bloodstream infections in newborns (the number of staphylococcal and gram negative septicemias or bacteremias in high-risk newborns)	35 (85%)	10 (24%)
Appropriate newborn bilirubin screening prior to discharge	34 (83%)	6 (15%)
Use of antenatal steroids for babies at risk of delivering before 34 weeks	30 (73%)	9 (22%)
Early elective delivery (before 39 weeks)	27 (66%)	12 (29%)
Appropriate deep venous thrombosis (DVT) prophylaxis in women undergoing C-section	26 (63%)	7 (17%)
Use of prophylactic antibiotics received within 1 hour prior to surgical incision—C-section	24 (59%)	7 (17%)
First-time, low-risk C-section (nulliparous, term, singleton, vertex, or NTSV)	21 (51%)	15 (37%)
Incidence of episiotomy	18 (44%)	8 (20%)
Exclusive breast milk feeding in the hospital	18 (44%)	12 (29%)

*Response options were as follows: not very important, somewhat important, extremely important, not sure.

†Response options were: not very likely, somewhat likely, very likely, I'm not sure.

Three factors appeared to influence how participants rated the importance of the measures. First, participants were most interested in measures related to babies' health, including health care associated bloodstream infections in newborns, bilirubin testing, and antenatal steroids for babies at risk of early delivery. One participant explained, "I just ranked things having to do with the babies much more important than anything else."

Second, participants were more interested in quality measures that they thought were clearly the hospital's responsibility, which included DVT prevention, antibiotics prior to C-section, bilirubin screening, and health care-associated bloodstream infections in newborns. Participants were unclear how to interpret or use hospital quality measures that they viewed as the doctor's responsibility, which included early elective delivery rates, NTSV C-section, and episiotomy. For instance, one respondent explained, "The doctor will make the decision. I have a friend, she was 37 weeks and they checked the baby, and she was told that the baby wasn't developed enough at this point. . . it was the doctor's decision, not the hospital."

Third, participants also noted that certain measures should be part of what they described as "standard care" that should happen for all patients (as appropriate). These measures included screening for jaundice, receiving prophylactic antibiotics prior to a C-section, and DVT prevention for C-section. It was unclear to participants why these rates would vary and would be concerned if the hospital did not perform well on these measures.

The measure of exclusive breast milk feeding provoked particularly strong reactions. Some participants considered breastfeeding to be a personal choice related to the mother's preference and not a reflection of the care the hospital provides: "I don't think you could base a hospital on this because it's your preference whether or not you choose to breastfeed your child, and the hospital can't force you to only feed the child breast milk in the hospital, so I don't feel like that's at all a reflection of the hospital." Some participants were also wary that high scores could indicate that hospital staff forced or pressured women to breastfeed, without regard to the mother's preference. However, some women with this perspective changed their minds as they heard from other participants about how the hospital staff can make a difference in breastfeeding success. Some participants stated that if they saw a low score on this measure, they would assume that providers and staff at the hospital were too busy to pay attention to individual patients, or that there was a lack of staff encouragement or specialized staff to support breastfeeding (e.g., lactation consultants).

Intentions to Use Maternity Care Quality Information

Participants' responses suggested that women find maternity quality information helpful at multiple points during their pregnancy, from preconception through the third trimester. A majority of the participants said they would consider using hospital quality information to help choose a provider if they received the information before getting pregnant or early in their pregnancy. In the second or third trimester, participants would consider switching providers if they saw that a hospital scored poorly. However, they noted the difficulty of switching providers midpregnancy, including building a relationship with a new provider. Alternatively, they would use the information to talk to their doctor about the quality of hospital care or add concerns to a checklist of things to keep track of at the hospital.

BASELINE SURVEY

Factors Important in Choosing a Hospital

In the survey, we asked about the importance of different factors when choosing a hospital for their baby's birth (Table 4). Accepting health insurance was the most highly rated factor, followed by good experiences in the past. The lowest rated factor was getting good ratings from other patients on a website that compares hospitals, but even that factor was very important or somewhat

Table 4: Factors Important When Choosing a Hospital (Survey, $n = 245$)

<i>In thinking about the hospital for your baby's birth, how important is it that the hospital. . .</i>	<i>Very Important</i>	<i>Somewhat Important</i>	<i>Slightly Important</i>	<i>Not at All Important</i>
a. Accepts your health insurance	240 (98%)	3 (1%)	0 (0%)	1 (0.4%)
b. Is one where you had a good experience in past	188 (77%)	40 (16%)	10 (4%)	6 (2%)
c. Was recommended by your doctor or midwife	156 (64%)	72 (30%)	12 (5%)	4 (2%)
d. Received high ratings for the quality of their maternity care on a website that compares hospitals	144 (59%)	78 (32%)	18 (7%)	5 (2%)
e. Has a convenient location to your home or workplace	131 (54%)	96 (39%)	13 (5%)	4 (2%)
f. Was recommended to you by a trusted friend or family member	125 (51%)	95 (39%)	20 (8%)	5 (2%)
g. Gets good ratings from other patients on a website that compares hospitals	122 (50%)	87 (36%)	30 (12%)	6 (2%)

important to 86 percent of participants. In the subgroup analysis (Table 6), African American respondents and respondents with lower educational attainment showed significantly higher ratings of importance for the two items related to websites comparing hospitals. First-time moms and respondents with higher educational attainment had significantly lower importance ratings for good previous experience with the hospital. Also, first-time moms showed significantly higher ratings of importance for recommendations from friends or family.

Awareness of Comparative Quality Information and Maternity Care Quality Measures

The survey assessed awareness of comparative quality information overall, and whether respondents were aware of specific measures related to maternity care quality (Table 5). Forty percent reported having read information comparing how good care is at different hospitals and 71 percent of those having read it reported using this information to choose a hospital; thus, 28 percent of

Table 5: Awareness of Comparative Quality Information and Maternity Care Quality Measures (Survey, $n = 245$)

<i>Item</i>	<i>Yes</i>
Awareness of comparative quality information: Information is available that compares how good the medical care is at different hospitals. This information is sometimes reported on a website or in a newspaper or magazine article. . .	
a. Have you ever read any information comparing how good the medical care is at different hospitals?	97 (40%)
b. [For those who had read information] Have you ever used this information to choose a hospital? ($n = 97$)	70 (72%)
Awareness of efforts to address quality measures: Have you read or heard about hospitals. . .	
c. Trying to support the mother's choice to breastfeed?	228 (93%)
d. Making sure to screen newborns for jaundice before they leave the hospital?	167 (68%)
e. Providing treatment to improve lung development in babies at risk of delivery before 34 weeks?	133 (46%)
f. Trying to reduce the number of babies being scheduled for delivery before 39 weeks unless there is a medical problem?	102 (42%)
g. Trying to reduce the use of unnecessary episiotomies? An episiotomy is a cut to widen the opening of a vagina during a vaginal delivery.	84 (34%)
h. Working to decrease the risk of blood clots in women who have C-sections?	35 (14%)

Table 6: Adjusted Difference between Demographic Groups on Importance and Awareness of Quality Information

Item	African American versus White (Ref)		Given Birth before versus First Time (Ref)		Education (Continuous)	
	b	CI	b	CI	b	CI
Table 4. How important is it that the hospital ...						
4b. Is one where you had a good experience in the past?	0.18	[-0.05, 0.40]	0.31**	[0.11, 0.52]	-0.11*	[-0.21, -0.01]
4d. Received high ratings for the quality of their maternity care on a website that compares hospital	0.46**	[0.21, 0.72]	-0.02	[-0.25, 0.22]	-0.23†	[-0.34, -0.12]
4f. Was recommended to you by a trusted friend or family member?	0.06	[-0.21, 0.33]	-0.31*	[-0.56, -0.07]	0.08	[-0.04, 0.19]
4g. Gets good ratings from other patients on a website that compares hospitals	0.43**	[0.15, 0.71]	0.02	[-0.23, 0.28]	-0.22**	[-0.34, -0.10]
Table 5. Have you read or heard about hospitals ...						
5d. Making sure to screen newborns for jaundice before they leave the hospital?	1.64	[0.75, 3.60]	3.22**	[1.51, 6.87]	1.08	[0.75, 1.55]
5f. Trying to reduce the number of babies being scheduled for delivery before 39 weeks unless there is a medical problem?	0.72	[0.35, 1.50]	5.39†	[2.51, 11.56]	1.57*	[1.08, 2.29]
5g. Trying to reduce the use of unnecessary episiotomies?	0.34*	[0.15, 0.80]	3.77**	[1.67, 8.52]	1.23	[0.84, 1.79]

* $p < 0.05$; ** $p < 0.01$; † $p < 0.0001$.

survey respondents reported using comparative quality information to choose a hospital. In addition, 68 percent of respondents indicated that they were very or somewhat likely to use comparative information when choosing a hospital for this pregnancy or a future pregnancy.

When asked about hospital efforts related to various quality measures, respondents were most familiar with exclusive breastfeeding in the hospital—with 93 percent of respondents reporting having heard of these efforts. They were least familiar with appropriate DVT prophylaxis in women undergoing C-section, with only 14 percent of respondents having heard of these efforts. In the subgroup analysis (Table 6), first-time moms reported significantly lower awareness of three quality measures—screening for jaundice, early elective delivery, and reducing unnecessary episiotomies. Also, African American respondents reported significantly lower awareness of reducing unnecessary episiotomies and respondents with lower educational attainment reported significantly lower awareness of early elective deliveries.

DISCUSSION

Factors That May Influence Use of Comparative Public Reports

Our study highlights several factors important for effective use of quality information by this audience.

Motivation to Look for Information Related to Pregnancy. Women currently pregnant or planning to become pregnant are an important audience for public reports of quality information. Participants in our focus groups reported being highly engaged in their care, interested in learning about quality information, and saw their role as being informed, asking questions, and voicing preferences to their doctor. Furthermore, other research has shown that pregnant women have the time and are highly motivated to seek information online related to pregnancy and childbirth (Romano 2007; Lagan, Sinclair, and Kernohan 2010).

Knowledge, Attitudes, and Awareness of Maternity Care Quality and Comparative Quality Information. Focus group participants were concerned about quality; these concerns were especially strong when discussing the health and safety of

their newborn babies. As reported elsewhere, consumer perceptions of quality in our focus groups initially focused on the interactions between the woman and her doctors or nurses (Sofaer et al. 2005). Also, women often did not expect quality to vary significantly among hospitals in their area, had limited understanding of the hospital's role as compared to the physician's role in ensuring quality, and limited awareness of many available maternity care quality measures. These findings indicate that the content of public quality reports should create connections between quality measures and topics that may be more salient to women.

Of our total survey respondents, 40 percent reported having read comparative quality information and 28 percent having used comparative quality information to choose a hospital. These findings are higher than reported elsewhere (James 2012; Fox and Duggan 2013), which may reflect this population's high level of engagement or a selection bias into our study. Survey respondents were more aware of some quality measures than others. In particular, respondents were more aware of efforts related to newborn health, such as breastfeeding or preventing jaundice, and less aware of measures related to care during labor and delivery, such as episiotomy. Regional efforts may have led to increased awareness of breastfeeding specifically, given that hospitals in NC have participated in efforts such as Baby-Friendly Hospital Initiative and North Carolina Maternity Center Breastfeeding-Friendly Designation program (North Carolina Division of Public Health: Nutrition Services Branch, 2014; World Health Organization, 2015; North Carolina Breastfeeding Coalition, n.d.).

Given the emotionally charged nature of decisions related to labor, delivery, and newborn care, emphasis of quality issues as a "standard" of care that women must live up to may lead to feelings of "shame" (Labbok 2008; Thomson, Ebisch-Burton, and Flacking 2014). These emotional factors came across most clearly in discussions of the breastfeeding measure. Breastfeeding is a prime example of a "preference-sensitive" activity, where women do not want hospital staff to override their preferences. In developing public reports, efforts should consider how to best frame and label measures to avoid perceived bias in the presentation. Testing plain language measure descriptions help make sure that the measures appear objective, balanced, and understood as intended (Agency for Healthcare Research and Quality, n.d.-b).

Relevance of Available Maternity Care Quality Measures. The most relevant quality measures focused on health outcomes for newborns and women them-

selves. However, the measure of most importance to consumers in our focus groups—health care–associated infections in newborns—was ultimately not available for use in our study. Developing health outcome measures will make public reports more relevant to consumers.

Focus group participants also expressed interest in clinician and hospital staff's communication with patients, shared decision making, and respect for women's preferences. Although the CAHPS surveys cover these topics, these measures are not maternity-specific (Angood et al. 2010). Creating maternity-specific measures on these topics would map more closely to women's needs and interests.

Although recent efforts to reduce early elective deliveries demonstrate the importance of hospital policies in ensuring high-quality and safe care (Centers for Medicare and Medicaid Services [CMS], n.d.; Galewitz 2013; Health Research and Educational Trust [HRET] 2014; National Quality Forum, n.d.; The Leapfrog Group, 2014), focus group participants often attributed responsibility for maternity care quality to individual physicians. Yet measuring quality at this level has been challenging for multiple reasons (Scholle et al. 2009; Christianson et al. 2010; Schlesinger et al. 2013; Yegian et al. 2013; Wolfson 2014; Agency for Healthcare Research and Quality, n.d.-a). During the focus groups, participants' awareness of the hospital's role in quality care increased, indicating that even if these issues are not immediately salient for women planning to give birth, the measures are still important if framed appropriately. If reporting at a physician level is not feasible in the shortterm to increase relevance, public reporting efforts could clearly explain the hospital's role in supporting quality care and how hospital quality measures can inform decisions about childbirth. In the long run, developing maternity care quality measures focused on patient-centered outcomes that span settings (individual physician, physician group, and hospital) may increase relevance and use for consumers (Conway, Mostashari, and Clancy 2013).

Although not explored in-depth in this study, our findings signal the importance of costs and coverage associated with giving birth. Specifically, participants in the focus groups identified financial counseling and support as an aspect of quality, and survey respondents identified insurance coverage as important in selecting a hospital. Combining public reports of quality data in the context of out-of-pocket costs to consumers may help make the information even more relevant (James 2012; Hibbard et al. 2013; Yegian et al. 2013).

Finally, even though current available measures may not be ideal, relevance can also be increased by presenting the measures using consumer-friendly language, providing explanations for how the quality measures are important and impact health outcomes, and distributing the information in time to make decisions.

Study Limitations

Overall, because the study location is in a highly educated area of North Carolina, the project findings, especially from the focus groups, may overrepresent highly educated women with private insurance. Also, statewide efforts around specific quality issues, such as support for breastfeeding in hospitals, may be reflected in the heightened awareness of these measures. As a result, we would expect that our study population may be more aware of and interested in quality information than the broader U.S. population.

Implications for Clinical Practice

Encouraging primary care physicians or gynecologists to discuss maternity care quality reports during annual exams with women who are planning to conceive could increase awareness of higher performing hospitals before selecting an obstetrician or midwife, who may only deliver at one hospital. Although receiving quality information earlier in pregnancy is preferable for selecting a physician or hospital, women found quality information equally useful to inform their care decisions throughout their pregnancy, in discussions with their care provider.

Because women often rely on their doctor to determine medically appropriate interventions, increasing awareness of the variation in the quality of maternity care may negatively affect the traditional patient-provider relationship. As more comparative quality information becomes available, especially information about individual physicians, facilitating constructive discussions about quality that simultaneously maintain trust between women and their providers would be a vital contribution (Carman et al. 2006).

More broadly, childbirth is a situation in which people expect to “partner” with their care provider. Women in our focus groups acknowledged that they would not know when an intervention is medically necessary, trusting their providers to make those determinations. Whether the interventions are medically necessary or not, the perceived risks associated with going against the provider’s judgment, such as harm to the baby, can be high. To mitigate

these challenges, providers can elicit and listen to women's preferences and provide plain language explanations about risks and benefits of various treatment options during prenatal care. Then, during labor and delivery, providers can partner with women in making decisions that consider both evidence and preferences and get informed consent before performing an intervention (The American College of Obstetricians and Gynecologists, 2009).

Implications for Future Research

Our study highlights several areas for future research. Our subgroup analysis pointed to differences by race and education about the importance of quality ratings and awareness of specific quality measures. Future research exploring these differences may help identify how to tailor interventions for different populations. Furthermore, an important question is the extent to which our findings are similar or different for groups that were underrepresented or not represented in our sample, specifically Latina ethnicity, recipients of Medicaid, and non-English speakers.

Understanding consumers' perceptions of cost, quality, and value across the care continuum—not just the hospital setting—could help create more relevant measures and public reports as the system transitions to new payment and care delivery models for maternity care (e.g., bundled payments, Accountable Care Organizations). Finally, developing and evaluating the impact of interventions that make connections between quality measures and issues that women care about will help to bridge the gap between availability and use of quality information.

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NOTE

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SUPPORTING INFORMATION

Additional supporting information may be found in the online version of this article:

Appendix SA1: Author Matrix.