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Clinician communication after discovery of a soft marker of aneuploidy during pregnancy: A mixed methods assessment of a communication workshop

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Abstract

Background: Soft markers of aneuploidy are common findings on obstetric ultrasounds but disclosure often increases patient anxiety. It is unknown whether communication training affects patient experience of soft marker disclosure. Our objective was to evaluate clinician experience of a simulation-based communication workshop and assess workshop influence on patient anxiety, understanding, and perception of communication quality.

Methods: We implemented a communication workshop for clinicians at an academic institution in 2019, and assessed clinician anxiety and confidence with counseling before and after. To assess effect of the workshop on patients, we surveyed pregnant people before and after workshop implementation for whom an echogenic intracardiac focus, choroid plexus cyst, or urinary tract dilation was identified. The primary outcome was anxiety. Some respondents completed a semi-structured interview. Interviews were analyzed using thematic analysis.

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Results: Twelve clinicians participated. Twenty-one out of 49 eligible patients (43%) completed a survey before the workshop and 40 out of 90 eligible patients (44%) completed a survey after. The risk of high anxiety after was similar to before the workshop (aRR 1.7, 95% CI 0.6 – 4.2). Twenty patients were recruited for an interview. Qualitative analysis revealed that patients' backgrounds, emotional impact of the conversation and clinician manner influenced perception of communication quality.

Conclusion: While a single clinician workshop did not affect patient anxiety, clinician manner and personalization play a large role in perception of counseling about soft markers of aneuploidy.

Keywords

Obstetrics and gynecology; communication skills; information handling; simulation; soft markers of aneuploidy

Introduction

Soft markers of aneuploidy are sonographic findings identified more commonly in fetuses with aneuploidy, but often reflect inconsequential anatomic variation.[1,2] Communication with patients about such markers occurs daily in obstetrical ultrasound units, and carries potential harm because it may heighten stress in normal pregnancies and lead to invasive testing, which risks fetal loss.[3–5]

Patients' perceptions of quality of care, satisfaction, and ability to cope with prenatal diagnoses have been associated with what and how information is conveyed.[6] Yet, dedicated training in the requisite communication skills remains rare within obstetrical training programs.

To address this need for training, we developed a clinician workshop based on a well-described model of simulation-based, inter-disciplinary communication training (PERCS: the Program to Enhance Relational and Communication Skills).[7–10] PERCS programs have demonstrated short- and long-term improvement in resident confidence engaging in emotionally intense, high-stakes conversations with patients,[8,11] although the impact on patients has not been studied.

We adapted the PERCS model to prenatal diagnosis and assessed the impact of a simulation-based workshop on patient anxiety, understanding, and perception of quality of communication using a pre-post study design and mixed methods to inform interpretation and application of results. We hypothesized that training would decrease patient anxiety and improve understanding of the soft markers of aneuploidy.

Materials and Methods

We invited all maternal-fetal medicine (MFM) faculty, fellows, and genetic counselors in a single institution's MFM division to participate in the 90-minute workshop, and of the 14 participants invited, 12 attended the workshop. While MFM faculty and fellows primarily disclose soft markers to patients, the genetic counselors will counsel patients about soft markers on occasion and are integral to our interdisciplinary team. Their inclusion in the

workshop was based on the interdisciplinary nature of learning established through the PERCS model. Faculty facilitators included those with expertise in communication training using the PERCS model and two MFM division members who participated in the workshop development. While the soft marker conversation is a common one, we aimed to address the manner of communication and non-verbal aspects, rather than the content of the counseling itself, which is well-described.[12] The PERCS approach emphasizes five pedagogical priorities: creating a safe and trustworthy learning environment; emphasizing ethical and relational dimensions of care; suspending hierarchy among participants; valuing reflection and self-awareness; and honoring multiple perspectives.[9]

A central part of the workshop was a conversation enactment (simulation) of an EIF disclosure to a patient and her husband, played by professional actors and guided by a case vignette. A physician disclosed the finding to the actors in a separate room. The conversation was broadcast into the conference room with the rest of the participants, and this conversation was followed by debriefing and feedback.

We used a pre/post study design to evaluate the workshop's effect on clinicians' comfort and confidence communicating with patients about unexpected ultrasound findings. We administered questionnaires four days before the workshop, and a link to the REDCap survey was emailed to participants immediately after the workshop, with three subsequent follow-up emails to ensure completion.

We invited all patients who presented from February to September 2019 for routine mid-trimester fetal anatomic ultrasounds at our tertiary care hospital to participate in a survey about counseling in the ultrasound unit. Patients could opt in or opt out of the study with a card given to them upon check-in. Inclusion criteria were: 1) English speaking; 2) maternal age 18 years or older; 3) viable non-anomalous fetus; 4) one of several established soft markers (echogenic intracardiac focus (EIF); choroid plexus cyst (CPC); or urinary tract dilation (UTDA1)); and 5) low-risk *a priori* screening, as defined by low risk by the relevant screening test. [2,12] In the case of the first trimester screen, a low risk result for trisomy 21 was less than 1 in 300 and for trisomy 18 or 13 was less than 1 in 150. If there was no aneuploidy screening, then a maternal age of less than or equal to 35 was used to define low risk.

We sent a survey to all eligible patients via email or text message within a week of the encounter. We mailed letters to non-responders with a unique code accessing an online survey, and followed up with phone calls. We included participants who completed the survey in the analysis and obtained written informed consent. We excluded participants in the post-workshop time period who were counseled by a physician who did not participate in the workshop.

We invited participants to participate in a ten-minute phone interview and contacted those who expressed interest. After verbal informed consent, we conducted a semi-structured interview using an interview guide that assessed prior experiences with ultrasound and perception of quality of counseling on soft markers. We recorded and transcribed interviews.

We performed chart review to obtain pregnancy-related variables. Demographic information, such as education, employment status, marital status, race, and ethnicity were self-reported on the survey. We assessed intolerance of uncertainty with the Intolerance of Uncertainty Scale (IUS).[13]

The primary exposure was counseling during the period of time after the workshop was implemented. Participants who completed a survey prior to the workshop (end of April 2019) were included in the pre-workshop group. The primary outcome was anxiety, as measured by the State-Trait Anxiety Inventory (STAI).[14] Secondary outcomes included state anxiety, trait anxiety, patient understanding of the soft marker, and patient perception of quality of communication with their counseling physician. Patient understanding of the soft marker was assessed through the degree to which the participant agreed with five statements developed specifically for this project. Perception of quality of communication was evaluated through eight questions adapted for this project from a published survey of patient perception of communication with their clinicians during prenatal care.[15] Responses to questions about patient understanding and perception of quality of communication were assessed using a four-point Likert scale from disagree strongly to agree strongly, and through targeted questions in the structured interviews.

Because of non-normal distribution, we dichotomized STAI score, defining high anxiety as an STAI score greater than or equal to 80 or a state anxiety score or trait anxiety score greater than or equal to 40, which is consistent with prior studies in pregnant populations.[16,17] We used modified Poission regression to calculate risk ratios (RR) with 95% confidence intervals (CI). Descriptive data were reported as proportion or median (IQR). Differences between groups were analyzed using Fisher's exact test for categorical variables and nonparametric tests for continuous variables. We considered variables that were qualitatively different between the pre- and post-workshop groups as potential confounders and retained in the model those that had an appreciable effect on the RR to generate an adjusted RR (aRR). We analyzed all data with SAS 9.4 (SAS Institute Inc., Cary, NC). All tests were two sided and p values <0.05 were considered statistically significant.

We analyzed responses to interview questions according to principles of thematic analysis.[18] We utilized Dedoose 7.0.23 (Dedoose, Los Angeles, CA) to facilitate data management. Three coders independently reviewed the qualitative data to generate initial codes. The coders met to share, reconcile, and refine codes and develop an initial codebook. Further refinement through team consensus meetings generated three main themes. A final analysis of the three main themes confirmed thematic saturation had been achieved. We used the qualitative information to explore patterns observed in the quantitative data and to inform future workshop development.

The institutional review board at our hospital approved this study.

Results

Participant response to workshop

Nine of twelve participants completed pre- and post-workshop assessments (8 physicians; 1 genetic counselor), for a response rate of 75%. The participants' median years of experience with MFM counseling was 9 years (interquartile range (IQR) 5-12), with the majority having had formal training with difficult conversations during fellowship or practicum and only 3 through continuing education courses.

Four of nine participants reported increased confidence regarding difficult conversations in general; one individual reported reduced confidence. An equal number of participants reported reduced anxiety and increased anxiety (n=3 for both). Regarding soft markers specifically, a third of the participants reported increased skill and confidence. None reported diminished skills and confidence, although just over half reported increased anxiety. With respect to communicating with patients about uncertainty, 4 (44%) of the participants reported both increased confidence and anxiety. We asked participants about the perceived learning value of specific elements of the workshop: sharing experiences with counseling about soft markers, case enactments and debriefing, and reflections. Seven out of 9 respondents found all of these components "Quite" or "Very" valuable. All participants responded that they would recommend the workshop to others.

Patient surveys

From February 2019 through April 2019, 684 fetal surveys were performed. Of these, 91 (13%) involved counseling about EIF, CPC, or UTDA1. Surveys were sent to 49 eligible participants; 21 completed a survey (response rate = 43%). During the post-workshop period, 1281 fetal surveys were performed. 183 (14%) involved counseling about EIF, CPC, or UTDA1. Surveys were sent to 90 eligible patients; 40 participants completed the survey (response rate = 44%). Median days to return the survey was similar before the workshop [13 days (IQR 5-31)] and after the workshop [15 days (IQR 7-33)], p = 0.57.

Participants in the post-workshop group were more likely to be White, to have completed a bachelor's degree, and to have experienced a pregnancy loss (Table 1). In addition, those in the post-workshop group had higher median IUS scores. The participants were otherwise similar with respect to demographic and pregnancy-specific variables (Table 1).

The median anxiety score was 66 (IQR: 55 – 85). While the median scores for the post group suggested higher overall STAI scores [67 (57 – 87) vs. 60 (52 – 72)], the risk of having an elevated score was not significantly different based on when a participant had received counseling relative to the workshop (aRR 1.7, IQR 0.6 – 4.2) (Table 2). Similarly, we did not observe a significantly increased risk of having an elevated state or trait anxiety score based on exposure to counseling after the workshop compared with before [aRR 2.0 (0.8 – 5.3) and aRR 1.7 (0.7 – 4.5)], respectively. We adjusted for IUS score, race, education, and history of pregnancy loss in all models.

Given that we did not observe a difference in STAI scores or increased risk of an elevated STAI score when comparing pre- and post-workshop groups, we evaluated STAI scores

based on maternal factors. Participants in the highest quartile of IUS scores had higher STAI scores ($p < 0.001$). No other maternal characteristic was significantly associated with STAI score, although anxiety scores were qualitatively higher in those who had a pregnancy conceived via in vitro fertilization, a history of pregnancy loss, prior experience with counseling about other ultrasound findings, and did not meet with a genetic counselor (Table 3).

Overall, patient perception of the quality of communication and understanding of the soft marker were similar in the pre- and post-workshop groups (Table 4), with the exception that a smaller proportion of the participants in the post-workshop group reported being able to explain the marker to someone else.

Patient interviews

Nine participants were interviewed before the workshop, and eleven were interviewed after the workshop. The demographics of these participants mirrored those of the overall cohort. Three main themes were identified from the analysis: Impact of background; emotions influence understanding; and manner of communication. Patterns based on timing of the interview (before or after the workshop) did not emerge. Each theme is described below with illustrative quotations.

Impact of background

The background of the patient informed expectations and interpretation of counseling and risk. Most people were expecting an ultrasound in which they would find out the fetal sex, but few expected to be counseled about a soft marker. Participants identified unique features about themselves, both in terms of how they best receive information and historical information to contextualize their responses.

> I'm an information person, so I probably would have liked more…numbers-wise… [Interview (Int.)138]

> The chances of [trisomy 18] are about 1 in 2000…which seems like low chance but in my previous pregnancy…the chance for the baby to be affected by SMA was about 1 to 10,000 and that was the case…so I guess the fact that people were trying to reassure me with the 1 to 2000 wasn't very reassuring. [Int.109]

> Because I have experience with…everything being okay during my pregnancy and then having a son with Down syndrome…I guess I'm a little bit skeptical…[Int.16]

Emotions influence understanding

Emotions at the time of ultrasound can impact understanding and interpretation of counseling, despite attempts at reassurance, as shown in the following examples.

> I just left a little bit…emotional…they didn't explain what it was…just the stress of it, if it's not…it was kind of, was it necessary? [Int.124]

> They weren't concerned about it…but it still made me feel nervous or uneasy. [Int.16]

> I usually…[am] collected and calm, I think it threw me off.. [Int.84]

In another interview, the participant felt overall reassured but acknowledged that due to the nature of the conversation and her own anxiety about it, it would be difficult to not worry:

> I think it's just my own personal anxiety about the whole thing. I don't think that any…doctor has made me feel like I should find a need for concern…By the end of it, they were like you've been through enough, we really want you to go out there and just try to enjoy the rest of this pregnancy…But, of course, I'm…going to worry that there is something going on…[Int.150]

Manner of communication

Physician manner of communication, in particular tone of voice and non-verbal communications, influences a patient's understanding of the quality of an interaction. In some cases, this helped ameliorate the upsetting news of the soft marker, placing the participant at ease:

> I obviously didn't expect to hear that there was a cyst on the brain to be seen…but the way and the manner in which he explained it and kind of put me at ease made me feel a lot better. [Int.27]

In other cases, this reassuring tone and information was perhaps left out or missed, but desired, by the patient:

> I wish they had told me things like, "but everything else looks okay' and like 'there's no other signs' and stuff like that because it just made me nervous…that sort of leaving there that something was actually wrong. [Int.115]

The manner of reassurance did not work for everyone, however, highlighting the anxiety-provoking nature of the conversation and the very personal information expected.

> I feel like she kind of explained it was…becoming more common now, but for us, since it's our first child, it's our first time going through this….it felt like it was given…in a nonchalant way. [Int.79]

The perception that a physician was rushed emerged in several interviews, in which participants focused on this aspect.

> It seems a little bit rushed and she left and I didn't get even the chance to absorb that I had a question. [Int.84]

> It would be nice…if they spend just a little more time…sometimes it just seems like they…have to get to the next patient. [Int.35]

Patients were often left with residual questions, leading them to seek reassurance or more information from other sources.

> She said, 'Don't google trisomy 18' so that made me want to google it…because I didn't have a lot of information…. [Int.16]

Finally, the entire encounter was perceived to not only include the counseling physician, but the sonographer too. There were several interviews in which the sonographer's input influenced the patient's perception of the visit:

> I'm one of those people who actually enjoy seeing the anatomy, and…there wasn't a lot of detail…it…did feel just slightly rushed. [Int.67]

> I didn't feel as clued into everything that was happening. I wasn't really getting a lot of information throughout the exam, as like this is what we're looking at, this is what I'm seeing, this is normal. [Int.92]

Discussion

To our knowledge, this is the first report of an educational program designed specifically to train obstetrics practitioners around communicating with pregnant patients about prenatally diagnosed soft markers of aneuploidy. Our 90-minute workshop was well-received by participants and the design to fit within their busy schedules enabled almost the entire division able to attend. The workshop enhanced the confidence of some of our physicians, but not all, in counseling patients about soft markers, transacting difficult conversations with patients in general, and counseling in the setting of uncertainty. Nevertheless, the workshop, administered to a single MFM division, did not ultimately affect patient anxiety levels. The workshop also did not affect patient perception of quality of communication with the counseling physician or patient understanding of the relevant soft marker. Patient interviews indicated that patient backgrounds and expectations, along with physician communication manner, influenced perceived interaction quality, and thus the workshop may need to be revised to focus more explicitly on these aspects.

Patients' state anxiety, which measures current anxiety, was similar before and after the workshops, and was lower than levels reported in other studies of pregnant people undergoing counseling about soft markers or aneuploidy risks.[5,14] Physician counseling may have focused on alleviating patient anxiety even before the workshop, given that this conversation is widely recognized as anxiety-provoking for patients.[3] Thus, physicians' previous experience levels may have precluded an appreciable effect of the workshop. Given the paucity of such educational opportunities in obstetrics, this model may be particularly well suited to trainees and early career practitioners.

Patient understanding about soft markers also did not differ between pre- and post-workshop groups, except regarding whether the marker could be explained to someone else. More than a quarter of post-workshop participants reported being unable to explain the marker to others, which could be due to sample variation. Alternatively, workshop training may have paradoxically complicated the conversations; prenatal genetic screening conversations can be complex and patients may not be able to recall conversation details.[19] Provision of take-home literature may help address this.[6,20]

Several providers paradoxically reported heightened anxiety after the workshop. The workshop may have illuminated ways in which the counseling may be more nuanced and fraught than some participants had previously appreciated.[3,21] Heightened anxiety has

been reported in other settings involving simulation and debriefing,[22] and where there are new realizations of potential deficiency in skills.[23]

Our workshop focused on identifying complexities of soft marker conversations and how to frame and normalize the findings for patients. Although the clinician workshop did not affect patient anxiety levels, we did identify several themes that highlight important aspects of a patient's perception of the communication. Our interviews found that patients had different emotional responses to the conversation, and these responses had the potential to impact information perception and anxiety levels, which may partially explain why no changes were demonstrated in anxiety levels overall based on timing of the counseling relative to the workshop. A patient's background and prior experiences, as well as their expectations coming into the ultrasound, can color their interpretation of risk. Furthermore, physicians' communication manner (tone of voice, non-verbal expressivity, indications of being rushed) greatly impacted patients' perception of quality, and have been described as important features in other studies as well.[6,24] Patients want physicians to be caring and family-centered[6] and to provide high quality information,[25] although the amount of information desired may depend on patients' individual values and desires for their pregnancy.[3] These elements, thus, may have a larger impact on a patient's experience of quality than physicians' strategies for normalizing and minimizing anxiety.

This study's strengths include a mixed-methods approach that assessed patient anxiety, patient satisfaction and understanding and also permitted deeper understanding of why broadly assessing anxiety may not capture important elements of workshop learning. This study also assessed how physician communication training impacts actual patient experience, rather than clinician experience alone.

This study was limited by small sample size, which potentially decreased the ability to identify a difference in our primary outcome. Recruitment was lower than anticipated because of exclusions and low response rate. EIF is common among those of Asian descent, [26] many of whom were excluded from our study as they were non-English speaking. Moreover, the counseling reflects individual physician practices in a single center, and may not be generalizable. Notably, all of our physicians disclosed EIFs and CPCs to patients, regardless of prior screening. Nevertheless, the themes identified from the qualitative analysis appear consistent with existing literature on patient experience of counseling about prenatal ultrasound findings in general. Finally, counseling with a genetic counselor was performed in a minority of patients, but this counseling, as well as information gleaned from other sources, could have influenced a patient's perception of the entire counseling experience in a different way than those just counseled by one provider. Since the rate of counseling with a genetic counselor was similar in both the pre and post workshop groups, this factor would not be expected to affect our results substantially.

Future iterations of the workshop should incorporate more individualized counseling strategies, including assessment of individual patient preferences for information and prior experiences that influence patient perception of risk. Next steps also include assessing whether advanced communication workshops on this topic would preferentially benefit less

experienced trainees, including those outside of maternal fetal medicine who may also be communicating about soft-markers.

In conclusion, we did not find differences in patient anxiety after a communication workshop for MFM clinicians focused on counseling about soft markers of aneuploidy. Patients' backgrounds and expectations and individual emotional responses to disclosure may hold more weight than the actual counseling content. More attention should focus on formally training clinicians, those early in their careers in particular, in communication manner around even common, benign prenatal ultrasound findings.

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Declaration of interests

The authors declare the following financial interests/personal relationships which may be considered as potential competing interests:

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Highlights

- Soft markers of aneuploidy are anxiety-provoking findings in pregnancy.
- We assessed a provider communication workshop's effect on patient anxiety.
- Counseling by providers who completed the workshop did not alter patient anxiety.
- Patient background and provider manner influenced perceived interaction quality.

Table 1.

Baseline participant characteristics, overall and stratified by pre- and post-workshop

Characteristic	All n = 61	Pre-workshop n = 21	Post-workshop n = 40
Maternal age at estimated date of delivery (years)	32 (30 – 35)	32 (29 – 34)	32 (31 – 36)
Education level			
Did not complete bachelor's degree	14 (23)	8 (38)	6 (15)
Bachelor's degree or higher	47 (77)	13 (62)	34 (85)
Race			
White/Caucasian	35 (57)	5 (24)	30 (75)
Asian	11 (18)	5 (24)	6 (15)
Black/African American	6 (10)	5 (24)	1 (3)
Other	9 (15)	6 (29)	3 (8)
Hispanic	6 (10)	3 (14)	3 (8)
Employment status			
Employed full or part time	47 (77)	15 (71)	32 (80)
Not employed	14 (23)	6 (29)	8 (20)
Born in United States	43 (70)	14 (67)	29 (73)
Other languages spoken at home	24 (39)	8 (38)	16 (40)
Nulliparous	35 (57)	12 (57)	23 (58)
In vitro fertilization pregnancy	6 (10)	3 (14)	3 (8)
History of pregnancy loss	16 (26)	2 (10)	14 (35)
Soft marker in prior pregnancy	2 (3)	0 (0)	2 (5)
Counseled about other ultrasound findings in prior pregnancy	7 (11)	3 (14)	4 (10)
Intolerance of Uncertainty score[†]	30 (23-35)	28 (22-33)	32 (24-39)
Screening before fetal survey			
Cell free DNA	26 (43)	8 (38)	18 (45)
Early risk assessment	21 (34)	7 (33)	14 (35)
Quad screen	1 (2)	1 (5)	0 (0)
Sequential screen	3 (5)	0 (0)	3 (8)
Diagnostic testing	1 (2)	0 (0)	1 (3)
None	9 (15)	5 (24)	4 (10)
Soft marker			
Echogenic intracardiac focus	33 (54)	13 (62)	20 (50)
Urinary tract dilation	8 (13)	2 (10)	6 (15)
Choroid plexus cyst	17 (28)	5 (24)	12 (30)
Echogenic intracardiac focus and choroid plexus cyst	3 (5)	1 (5)	2 (5)
Met with genetic counselor due to finding	6 (10)	2 (10)	4 (10)
Fellow involved with counseling	12 (20)	4 (19)	8 (20)

Data presented as median (interquartile range) or n (%)

† Higher scores indicate higher intolerance to uncertainty

Table 2.

Anxiety scores and risk of high anxiety in the post-workshop compared with pre-workshop group

	Median Anxiety Score (Interquartile Range)			High Anxiety n(%)		Risk Ratio for High Anxiety (95% CI)		
		All n = 61	Pre-workshop n = 21	Post-workshop n = 40	Pre-workshop n = 21	Post-workshop n = 40	Crude	Adjusted
State-Trait Anxiety Inventory	66 (55 – 85)	60 (52 – 72)	67 (57 – 87)	4 (19)	13 (33)	1.7 (0.6 – 4.6)	1.7 (0.6 – 4.2)	
State Anxiety	32 (26 – 42)	31 (24 – 36)	32 (26 – 44)	4 (19)	14 (35)	1.8 (0.7 – 4.9)	2.0 (0.8 – 5.3)	
Trait Anxiety	33 (28 – 40)	30 (26 – 36)	34 (29 – 42)	4 (19)	13 (33	1.7 (0.6 – 4.6)	1.7 (0.7 – 4.5)	

CI: confidence interval

Adjusted for Intolerance of Uncertainty score, race, education, and pregnancy loss

Table 3.

Associations between respondent characteristics and State-Trait Anxiety Inventory scores

Characteristic	All n = 61	State-Trait Anxiety Inventory	p
Maternal age ≥ 35 years			0.85
Yes	16 (26)	67 (56 – 81)	
No	45 (74)	63 (55 – 85)	
Education level			0.26
High school or less	3 (5)	52 (47-66)	
Some college or associate's degree	11 (18)	74 (57-97)	
Bachelor's degree or higher	47 (77)	66 (55-85)	
Race			0.11
White/Caucasian	35 (57)	66 (57-86)	
Asian	11 (18)	57 (46-68)	
Black/African American	6 (10)	60 (52-98)	
Other	9 (15)	74 (66-91)	
Hispanic			0.47
Yes	6 (10)	70 (66 – 77)	
No	55 (90)	64 (55 – 86)	
Employment status			0.23
Employed full or part time	47 (77)	66 (56 – 87)	
Not employed	14 (23)	60 (49 – 72)	
Born in United States			0.72
Yes	43 (70)	65 (55 – 85)	
No	18 (30)	70 (55 – 91)	
Other languages spoken at home			0.67
Yes	24 (39)	66 (53 – 88)	
No	37 (61)	64 (56 – 85)	
Nulliparous			0.71
Yes	35 (57)	66 (55 – 87)	
No	26 (43)	65 (55 – 85)	
In vitro fertilization pregnancy[†]			0.19
Yes	6 (10)	86 (68 – 91)	
No	54 (90)	65 (55 – 79)	
History of pregnancy loss			0.06
Yes	16 (26)	73 (63 – 87)	
No	45 (74)	61 (50 – 77)	
Counseled about other ultrasound findings in prior pregnancy[a]			0.15
Yes	7 (12)	72 (66 – 86)	
No	53 (88)	63 (52 – 85)	

Characteristic	All n = 61	State-Trait Anxiety Inventory	p
Intolerance of Uncertainty score			< 0.001
Top tertile	20 (33)	86 (66 – 95)	
Bottom two tertiles	41 (67)	60 (49 – 72)	
Cell free DNA screening pre survey			0.49
Yes	26 (43)	67 (57 – 85)	
No[≠]	34 (57)	62 (50 – 86)	
Soft marker			0.68
Echogenic intracardiac focus	33 (54)	67 (58 – 85)	
Urinary tract dilation	8 (13)	63 (50 – 69)	
Choroid plexus cyst	17 (28)	63 (50 – 86)	
Echogenic intracardiac focus and choroid plexus cyst	3 (5)	56 (55 – 77)	
Met with genetic counselor due to finding			0.10
Yes	6 (10)	53 (49 – 56)	
No	55 (90)	66 (57 – 86)	
Fellow involved with counseling			0.91
Yes	12 (20)	57 (54 – 94)	
No	49 (80)	66 (56 – 79)	

Data presented as median (interquartile range) or n (%)

[†]1 missing data

[≠]Excluded one person who had diagnostic testing before the fetal survey

Table 4.

Perception of quality of communication and patient understanding in the pre- and post-workshop groups

	Pre-workshop n = 21	Post-workshop n = 40	p
Perception of quality of communication			
The doctor seemed rushed	3 (14)	4 (10)	0.68
I wanted care that differed from what the doctor recommended	1 (5)	1 (3)	1.00
The doctor used medical words I did not understand [†]	2 (10)	4 (10)	1.00
The doctor spent enough time with me	17 (81)	34 (85)	0.73
The doctor answered questions to my satisfaction	18 (86)	37 (92)	0.41
The doctor encouraged me to talk about all of my concerns about the ultrasound	17 (81)	34 (85)	0.73
I plan to follow this doctor's instructions	20 (95)	38 (95)	1.00
I have a great deal of confidence in this doctor	19 (90)	37 (92)	1.00
Patient understanding about soft marker			
I had a good understanding of the marker	18 (86)	32 (80)	0.73
I can explain the marker to someone else	20 (95)	29 (72)	0.04
Doctor's explanation alleviated my concerns	18 (86)	29 (72)	0.34
I understand the testing options available to me	19 (90)	34 (85)	0.70
I do not understand why the doctor spent time discussing the ultrasound finding	3 (14)	2 (5)	0.33

Data presented as n (%)

[†]One missing response in the pre-workshop group