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Development of a patient-reported measure of the interpersonal quality of family planning care

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Abstract

Objective: The objective was to describe the development and assess evidence of the validity of a patient-reported scale measuring the interpersonal quality of contraceptive counseling.
Study design: We performed initial item selection based on qualitative work regarding patient preferences for contraceptive counseling and a review of patient-reported measures of communication. We then administered these items as part of a cohort study of women receiving contraceptive counseling, along with items measuring patient satisfaction with counseling and method choice, and coded audio recordings of the contraceptive counseling visits for patient-centered communication. We determined the final scale based on interitem correlations and exploratory factor analysis. Predictive validity of the scale has been demonstrated previously. We assessed content, construct, convergent and discriminant validity by investigating associations between the final scale and the satisfaction and audio-recording-derived measures using mixed effects logistic regression.
Results: The items were administered to 346 women between 2009 and 2012 in the San Francisco area. We selected an 11-item, 1-factor Interpersonal Quality of Family Planning (IQFP) scale, with a Cronbach's alpha of 0.95. This scale showed positive associations with measures of satisfaction with counseling and with the chosen method. IQFP was also associated with provider communication practices, including eliciting the patient perspective and demonstrating empathy.
Conclusions and implications: The IQFP scale demonstrates construct, convergent, discriminant and predictive validity for measuring the interpersonal quality of contraceptive counseling. It shows promise as a measure that can be used in research and quality improvement efforts to ensure that patients' experiences and preferences are prioritized in family planning care.
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1. Introduction

Quality improvement in health care is a growing area of focus, with efforts to address deficiencies in patient experience, cost and population health, as described by the influential Triple Aim framework for optimizing health care systems [1]. One increasingly emphasized dimension of quality is patient-centeredness, defined by the Institute of Medicine as "care that is respectful of and responsive to individual patient preferences, needs, and values and [ensures] that patient values guide all clinical decisions" [2]. This emphasis on patient-centeredness stems both from the ethical obligation to respect the patient's humanity and experiences [3], as well as from the association of patient-centered care with improved health outcomes [4].

Patient-centeredness is especially important in family planning care because it deals with the uniquely personal domains of reproduction and sexuality. In addition, a history of coercion around contraception, especially among poor women and women of color [5], adds to the importance of explicitly prioritizing women's preferences, needs and values in communication about contraception. Accordingly, the Providing

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Quality Family Planning Services recommendations released in 2014 by the Centers for Disease Control and Prevention and Office of Population Affairs list client-centered care as one of the main attributes of quality in the delivery of family planning care [6].

While there are several dimensions to patient-centeredness, a core aspect is interpersonal communication between provider and patient. Measuring and providing feedback to providers about the patient-centeredness of their communication are essential to research and quality improvement efforts around contraceptive counseling [7]. To meet this need, we have developed the Interpersonal Quality of Family Planning Care (IQFP) scale using a mixed-methods approach involving interviews with patients, observation of family planning visits and scale development. This measure has previously been found to have predictive validity for method continuation [8]. The purpose of this paper is to describe development of the instrument and to report on other measures of its validity.

2. Materials and methods

2.1. Initial item selection

In order to define the domains of interest for development of this measure, we first performed a qualitative study investigating women's preferences and experiences for contraceptive counseling, informed by a systematic review investigating quality of care in family planning [9] and other relevant literature. This study used semistructured interviews with women of diverse race/ethnicities in order to understand aspects of care that align with women's own conceptions of quality contraceptive counseling. We identified three domains of relevance for women: interpersonal connection, receiving adequate information and decision support [10]. We then performed a review of patient-reported measures assessing the experience of patient-centered care in health care generally to identify constructs included in these measures [11–16], and mapped these on to the domains identified in our qualitative work to ensure that they were all represented. Drawing from both these measures and content area-specific knowledge related to family planning, we then identified items corresponding to each construct that was appropriate for the contraceptive context. For items related to quality interpersonal communication, these items were derived from the Consultation and Relationship Empathy (CARE) scale [16] and the Interpersonal Processes of Care (IPC) scale [11] (three items). As the IPC scale is designed to measure care over the past 12 months, these items were adapted to be visit specific, in collaboration with the original developer of the IPC scale, Dr. Anita Stewart. Items related to decision support were again derived from the IPC scale (two items) as well as two items developed for the purpose of this scale based on our qualitative work [10]. Finally, for the information domain, items were derived from the IPC (two items) and the CARE scale (one item), in addition to two items that were developed for the purpose of this scale. This process identified 17 items. Consistent with the CARE scale [16], which is also designed to be visit specific, our response options were a 5-point Likert scale, ranging from *poor* (1) to *excellent* (5).

2.2. Study setting, design and data collection

We conducted a longitudinal cohort study (the Patient–Provider Communication about Contraception study) in six clinics in the San Francisco Bay Area in 2009–2012 with the goal of investigating the relationship between contraceptive counseling and contraceptive continuation, as well as exploring racial–ethnic differences in counseling, as previously described [8]. Briefly, women were eligible if they wished to discuss starting or changing a contraceptive method, were seeing a provider participating in the study and spoke English. In addition, only white, black and Latina women were included, as these were the only racial/ethnic groups with adequate representation in the participating clinics for investigation of disparities. We approached patients at the time of their visit and assessed for eligibility and interest in participating. After completing written informed consent, those who enrolled in the study completed a previsit survey assessing their demographics and a postvisit survey immediately following the visit about their method choice and experience of care. Both surveys were self-administered on paper. Patient's contraceptive counseling visits were audio recorded, and patients were contacted for follow-up by phone or email to assess method continuation at 3 and 6 months.

Providers also completed written informed consent. Data collection from providers consisted of a one-time demographic survey following completion of data collection from patient participants. We linked patient and provider data through use of a provider identifier. All patients and providers received reimbursement for their time, and the UCSF Institutional Review Board approved the study.

2.3. Identification of the IQFP scale

We collected the 17 items assessing patient experience of care in the postvisit survey. To identify the final IQFP scale, statistical analysis included examination of the distribution and interitem correlation of individual items. Among items that were highly intercorrelated ($r>.80$), we retained items based on conceptual grounds. We then used exploratory factor analysis (EFA) with promax rotation to identify relationships between items and determine whether any could be removed or grouped. Following standard techniques, interpretation was based upon eigenvalues (>1.0), scree plots and factor item loadings (items loading >.60 on a given factor and <.40 on any other factor). Based on the results of the EFA, we created a summary scale by summing the selected item responses. Missing responses on any individual IQFP items resulted in a missing total IQFP score. We assessed internal consistency of the total scale using Cronbach's α, as well as corrected item–total correlations. We dichotomized the resulting scores for analysis based on both conceptual grounds — with a less than perfect score being considered meaningfully different from a

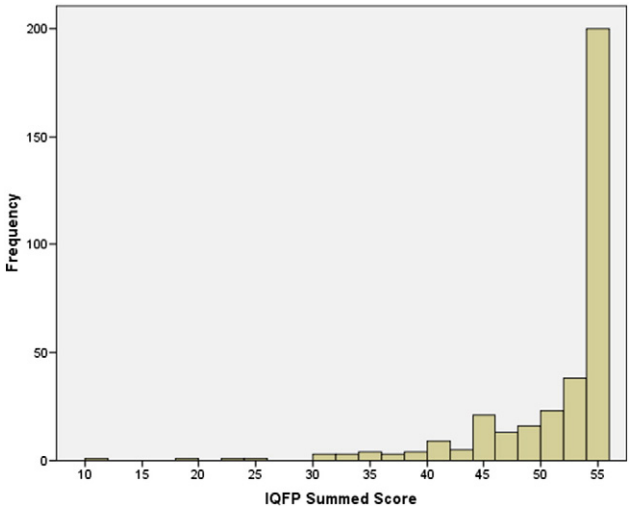

Fig. 1. Distribution of summed IQFP scores (range 11–55) (n=346).

perfect score — and high negative skew of the distribution of scores (Fig. 1). The use of a dichotomous score is consistent with the commonly used Consumer Assessment of Healthcare Providers and Systems measures of patient experience [17].

2.4. Validity testing

We assessed content validity, the extent to which a measure represents all areas or facets of a construct, based on representation of all relevant domains and constructs from previous qualitative work on contraceptive counseling and conceptual understanding of patient-centered communication.

We assessed construct validity, the degree to which a measure assesses what it purports to measure, through comparison of IQFP scores with measures of global visit satisfaction and satisfaction with the method selection process collected from the postvisit survey. The choice of these measures of validity was based on the fact that measures of satisfaction often correlate with measures of patient-centered processes of care but are considered distinct [18]. We conceptualized the IQFP as being more specific than measures of satisfaction, as satisfaction measures tend to be informed by expectation disconfirmation theory (i.e., the extent to which an experience exceeded or fell below expectations [18,19]) and have additional limitations of lack of differentiation and lack of specificity of measured behaviors [20]. In contrast, the items in the IQFP assess the extent to which the patient experienced or perceived specific types of communication and exchanges consistent with patient-centered care. To measure global visit satisfaction, women were asked to rate their "overall satisfaction with this visit to my health care provider" on a 5-point Likert scale from excellent to poor; due to high levels of negative skew with most respondents rating high satisfaction (e.g., skewness statistic >1.5), the measure was dichotomized to compare "excellent" responses (75%) to all others. Satisfaction with the method selection process was assessed using the question "How satisfied are you with the decision making process about which birth control method you will use?", using a 7-point Likert scale. Patients completely satisfied (53%) were compared to all others.

Additional measures used to assess construct validity included satisfaction with method choice and the likelihood of recommending the provider to a friend. In both cases, our hypothesis was that these measures would correlate positively with patient experience of care measured using the IQFP. We assessed patient's immediate postvisit satisfaction with their chosen method using a 7-point Likert scale ranging from completely unsatisfied to completely satisfied, dichotomized to compare completely/very satisfied (60%) to somewhat satisfied, neutral and unsatisfied patients. Whether the patient would recommend the provider to a friend was assessed with response options of "No, definitely not," "No, I don't think so," "Yes, I think so" and "Yes, definitely" and dichotomized by grouping the "no" and "yes" responses [21].

We evaluated convergent validity of the IQFP by assessing its association with clinician communication practices consistent with patient-centered care [8,22]. We assessed clinician communication practices from audio recordings of visits using measures derived from the Four Habits Coding Scheme (4HCS), a validated observational approach to assessing patient-centered health communication [22], which we modified slightly for the family planning context in collaboration with the original developer of the measure. The 4HCS consists of four components; Invest in the Beginning (Habit 1), Elicit the Patient Perspective (Habit 2), Demonstrate Empathy (Habit 3) and Invest in the End (Habit 4). This modification consisted of modifying one of the habits, Habit 2, to include items assessing the elicitation of patients' experience and preferences for birth control rather than the more generic goals of eliciting their "understanding of the problem" and their "goals for visit." In addition, we eliminated one item related to nonverbal communication in Habit 3, as our data consisted of audio recordings only. We performed systematic coding as previously described. All habits were coded to compare those scoring in the top quartile of effectiveness for the habit to those scoring lower [8].

Finally, we assessed discriminant validity, the extent to which a measure lacks association with measures to which it should in fact not be related, using time spent counseling, also assessed from the audio recordings, since conceptually the IQFP would not be expected to be a function of the time spent counseling. In practice, the interpersonal quality of the exchange could either reduce the amount of time needed to elicit and address patient needs or extend the length of the visit if more complex concerns emerged, which would not produce a unidirectional association.

Construct, convergent and discriminant validities were assessed by examining associations of the IQFP with the satisfaction measures, results of the 4HCS and time spent counseling using mixed effects logistic regression models. All logistic regression models included fixed effects for clinic and random effects for provider, and adjusted models also included variables prespecified as potentially able to

affect experiences, evaluations and outcomes of health care, which were patient age, race/ethnicity and income. Statistical significance was assessed using a p value of .05.

We reported the predictive validity of the IQFP in a previous publication, with a high score on IQFP having a positive association with longitudinal contraceptive method continuation at 6 months [odds ratio (OR)=1.8; 95% confidence interval (CI)=1.1–3.0] [8]. In the current analysis, we present associations between alternative visit evaluation measures with contraceptive continuation, using similar methods as described above, in order to provide comparative information about the relative value of these measures. In addition to the covariates described above, the chosen contraceptive method was also included in models assessing associations with contraceptive continuation. Finally, we assessed mediation of the relationship between the IQFP and contraception continuation by postvisit satisfaction with method choice using the approach of Baron and Kenny [23].

3. Results

3.1. Sample characteristics

We recruited 349 patient participants for this study. We tracked the number of eligible women who declined to participate over the study period with the exception of a 2-month period at one clinic during which 32 participants were recruited. Excluding these 32 women, out of a total of 382 women invited to participate, 66 eligible women declined. Complete IQFP data were available for 346 of the 349 patient participants, and this sample was used in all further analyses. The sample of 346 women was predominantly young, with mean age 26.8; diverse, with African American and Hispanic/Latino women comprising 54% of the sample; mostly low income; and fairly well educated, with 73.4% having more than a high school education (Table 1). Almost half had never been pregnant, while about a third reported one or more births. Eighty-four percent of participants completed follow-up at 6 months.

Table 1
Demographic characteristics of patient and provider study participants (n=346)

Patient demographics	
Mean age, SD (range=16–53)	26.8 (6.9)
Age group (%)	
16–19	11.8
20–24	33.5
25–29	26.0
30–34	11.6
35+	17.1
Race/ethnicity (%)	
African-American, non-Hispanic	28.6
White, non-Hispanic	45.7
Hispanic/Latino	25.7
Federal poverty level (%)	
<100%	42.5
101%–200%	20.5
≥200%	37.0
Highest education completed (%)	
High school or less	26.6
Some college	37.9
College graduate or more	35.5
Highest education completed by parent (%)	
High school or less	36.8
Some college	25.8
College graduate or more	37.4
Pregnancy history (%)	
Never pregnant	47.7
At least one pregnancy, no births	19.4
One or more births	32.9
Provider demographics	
Race (%)	
White	70.5
Nonwhite	29.5
Provider degree (%)	
M.D. or D.O.	24.3
N.P., P.A. or C.N.M.	75.7
Provider age (%)	
Under 46	37.0
46–55	36.2
56 and older	26.9

3.2. Factor analysis, internal consistency and reliability

As described, we initially identified 17 items through a review of patient-reported quality measures, literature related to contraceptive counseling and qualitative work on women's preferences for contraceptive counseling [10]. We reviewed item distributions, areas of conceptual overlap and intercorrelations among items to reduce the number of items to 11. EFA of the remaining items was consistent with a one-factor solution (eigenvalue=7.54; 68.58% of total variance explained), with factor loadings ranging from 0.77 to 0.87 (Table 2). The final 11-item IQFP scale was calculated as the sum of the item scores, with a range 11 to 55 and average value 51.2 (±6.7) (Fig. 1). Cronbach's alpha was 0.95, and item–total correlations ranged from 0.74 to 0.84, suggesting good internal consistency (Table 2). We contrasted scores of 55 vs. <55, with 50% of the sample giving their providers the top possible rating.

3.3. Validity testing

Content validity was established through verification that the final 11-item scale included all relevant domains identified in previous qualitative work. Measures for evaluating construct validity were positively associated with IQFP total score in both unadjusted and adjusted logistic regression models (Table 3). For parsimony, we report unadjusted models here, while adjusted models can be found in Table 3. Compared to lower IQFP, participants with high IQFP rating scores were more likely to report high overall satisfaction with their clinical visit (100% vs. 50.9%, p<.001) and satisfaction with the process of selecting a contraceptive method postvisit (76.9% vs. 30.1%, p<.001). High IQFP patient ratings are associated with patient report of high satisfaction with their

Table 2
Factor loadings and item–total correlations for items in the IQFP measure (n=346)

Please rate the health care provider you saw today with respect to the following qualities:	% Excellent	M (SD)	Factor loading	Item–total correlations
Respecting me as a person	80.7%	4.73 (.63)	0.797	0.748
Showing care and compassion	77.2%	4.68 (.69)	0.836	0.786
Letting me say what mattered to me about my birth control method	78.0%	4.68 (.71)	0.849	0.803
Giving me an opportunity to ask questions	79.8%	4.71 (.64)	0.827	0.780
Taking my preferences about my birth control seriously	83.0%	4.75 (.65)	0.802	0.750
Considering my personal situation when advising me about birth control	75.1%	4.65 (.72)	0.858	0.824
Working out a plan for my birth control with me	72.0%	4.60 (.75)	0.870	0.840
Giving me enough information to make the best decision about my birth control method	70.5%	4.59 (.74)	0.847	0.814
Telling me how to take or use my birth control method most effectively	72.3%	4.59 (.79)	0.788	0.754
Telling me the risks and benefits of the birth control method I chose	66.8%	4.46 (.90)	0.774	0.735
Answering all my questions	78.1%	4.67 (.73)	0.855	0.824

Response categories: 1 = poor, 2 = fair, 3 = good, 4 = very good, 5 = excellent.

contraceptive method decision (68.2% vs. 52.3%, p=.003) and recommending the provider to a friend (96.0% vs. 63.6%, p<.001).

For the assessment of convergent validity, three of four observed provider behaviors known to strengthen clinical communication were related to the IQFP, including investing in the beginning (32% vs. 17%, p=.001), eliciting the patients' perspective (37% vs. 19%, p<.001) and demonstrating empathy (30% vs. 17%, p=.005). All associations remained significant after accounting for clustering by provider and clinic and patient demographic factors. Viewed together, these results provide strong support for the construct and convergent validity of the IQFP. Furthermore, the number of minutes spent in a counseling interaction was not significantly associated with patient IQFP ratings, providing support for discriminant validity since the quality of interpersonal care is conceptualized as functioning independent from the length of the counseling exchange.

As noted, we had previously demonstrated predictive validity of the IQFP scale with contraceptive continuation [8]. Unlike the IQFP, other patient evaluations of the contraceptive counseling visit and process were not significantly associated with contraceptive continuation when examined in individual univariate regression models (Table 4), with the exception of satisfaction with contraception method choice, which was significantly associated with continuation of contraception method at 6-month follow-up [adjusted OR (aOR) 3.8, 95% CI 2.2–6.5; Table 4]. In a multivariate model, we explored whether satisfaction with method choice mediated the association between high IQFP and method continuation at 6 months. The association between IQFP and method continuation was reduced (aOR 1.6, 95% CI 0.9–2.6, p=.10) in the model including both factors, while the association of satisfaction with method choice was strong and statistically significant (aOR 3.6, 95% CI 2.1–6.4, p<.001). This indicates that at least part of the association between IQFP and method continuation is due to the association between IQFP and satisfaction with method choice, as method choice is strongly associated with method continuation.

4. Discussion

This newly developed measure of interpersonal quality of contraceptive counseling, developed using formative research with family planning patients, existing tools for assessing client–provider interactions and direct observation of contraceptive counseling visits, demonstrates promising internal

Table 3
Unadjusted and adjusted associations between IQFP and measures of construct, convergent and discriminant validity (n=346)

Validity TYPE		IQFP score		Unadjusted OR[a] (95% CI)	Adjusted OR[b] (95% CI)
		55	<55		
Construct	% High global visit satisfaction	100.0	50.9	1.96 (1.27–3.04)	2.02 (1.30–3.21)
	% Completely satisfied with method selection process	76.9	30.1	7.83 (4.98–12.29)	8.26 (5.30–12.88)
	% Very/completely satisfied with method choice	68.2	52.3	1.93 (1.21–3.10)	2.02 (1.23–3.33)
	% Would recommend provider to friend	96.0	63.6	13.66 (5.88–31.77)	16.03 (6.52–39.39)
Convergent	Provider communication practices				
	Invests in the beginning	32.4	16.6	2.42 (1.35–4.31)	2.28 (1.26–4.12)
	Elicits patient perspective	37.1	18.8	2.37 (1.38–4.05)	2.35 (1.36–4.05)
	Demonstrates empathy	30.0	16.5	2.02 (1.15–3.54)	1.92 (1.08–3.40)
	Invests in the end	27.1	22.4	1.23 (0.71–2.14)	1.24 (0.70–2.18)
Discriminant	Mean minutes of contraceptive counseling (SD)	22.0 (11.1)	19.9 (9.4)	2.35 (0.92–6.02)	2.51 (0.99–6.25)

[a] Unadjusted logistic regression relationship with IQFP accounting for clustering by provider (random effect) and clinic (fixed effect).
[b] Adjusted logistic regression relationship with IQFP accounting for clustering by provider (random effect) and clinic (fixed effect), as well as age, federal poverty level and race/ethnicity.

Table 4
Associations of IQFP and single-item measures of patient experience with contraceptive continuation at 6 months

	Adjusted OR (95% CI)
High IQFP	1.81 (1.09–3.00)
High global visit satisfaction	1.77 (0.97–3.24)
Completely satisfied with method selection process	1.44 (0.81–2.58)
Very/completely satisfied with method choice (post-visit)	3.76 (2.16–6.53)
Would recommend provider to friend	1.59 (0.83–3.04)

Results of logistic regression models with a single predictor of interest in addition to covariates. Adjusted logistic regression additionally adjusted for age (continuous), race/ethnicity, pregnancy history, federal poverty level, contraceptive method selected at index visit.

validity as shown by Cronbach's alpha. In addition, correlations with measures of satisfaction and observed patient-centered provider behaviors suggest reasonable construct and convergent validity. Finally, discriminant validity was evidenced by the absence of an association between the time spent counseling and the interpersonal quality of the exchange.

Predictive validity of the IQFP has previously been demonstrated, with this measure being associated with continuation of the chosen method at 6 months [8]. In contrast, global visit satisfaction measures, despite their relationships with IQFP, did not demonstrate the same association with continuation. Similarly, in a large study of contraceptive counseling in primary care visits, satisfaction with counseling measured with a single global question was not associated with the use of effective contraceptive method at last intercourse [24]. The superior performance of the IQFP may be related to the inclusion of multiple items, which is associated with improved test characteristics. Further, given that the IQFP was derived from interviews with patients and measures distinct elements of the counseling exchange, this metric likely captures features specific to patient-centered contraceptive counseling that contribute to the ability of patients to choose a method that they are able to continue. This hypothesis is supported by the result of our mediation analysis, which suggests that greater satisfaction with method choice is one pathway through which high IQFP influences method continuation. The finding that even after controlling for method satisfaction there is a trend towards an association between IQFP and method continuation suggests that there may be other mechanisms by which IQFP influences contraceptive use, such as knowledge about method use and side effects. Overall, these predictive validity findings make this measure more useful than global satisfaction measures for studies of counseling that have a goal of improving contraceptive use.

Limitations of these results include that the construct, discriminant and predictive validities were evaluated in the data source from which the measure was derived. Subsequent testing of this measure should evaluate the reproducibility and generalizability of our findings. One particular area of consideration for future evaluation is a test–retest assessment of measure stability over time. Research to test this quality metric in other settings would provide further evidence of the measure's validity. In addition, while the IQFP was found to correspond to provider communication practices, it is not known which specific behaviors influence the IQFP.

In conclusion, the IQFP scale shows considerable promise for evaluating contraceptive counseling quality from the patient perspective, with potential for use in research assessing clinical services, including intervention studies designed to improve contraceptive counseling. In addition, the potential for this measure to be used in quality improvement is of note given recent efforts to define and validate quality measures based on the effectiveness of contraceptive methods used by patients [25]. In this context, the further validation of measures such as the IQFP can help to ensure that women's experiences are prioritized in family planning research and clinical care. Additional research on the IQFP could develop its potential for use as a performance measure, including exploring whether further reduction in the number of items is appropriate, which would make it more feasible for use as a performance measure, as well as assessing its validity and reliability when aggregated by provider or clinic.

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