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A research coding method for the basic patient-centered interview

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ABSTRACT

Objective: To develop a more reliable coding method of medical interviewing focused on data-gathering and emotion-handling.
Methods: Two trained (30 h) undergraduates rated videotaped interviews from 127 resident-simulated patient (SP) interactions. Trained on 45 videotapes, raters coded 25 of 127 study set tapes for patient-centeredness. Guetzkow's U, Cohen's Kappa, and percent of agreement were used to measure raters' reliability in unitizing and coding residents' skills for eliciting: agenda (3 yes/no items), physical story (2), personal story (6), emotional story (15), using indirect skills (4), and general patient-centeredness (3).
Results: 45 items were dichotomized from the earlier, Likert scale-based method and were reduced to 33 during training. Guetzkow's U ranged from 0.00 to 0.087. Kappa ranged from 0.86 to 1.00 for the 6 variables and 33 individual items. The overall kappa was 0.90, and percent of agreement was 97.5%. Percent of agreement by item ranged from 84 to 100%.
Conclusions: A simple, highly reliable coding method, weighted (by no. of items) to highlight personal elements of an interview, was developed and is recommended as a criterion standard research coding method.
Practice implications: An easily conducted, reliable coding procedure can be the basis for everyday questionnaires like patient satisfaction with patient-centeredness.

1. Introduction

There has been considerable interest in training students, residents, and practitioners in patient-centered care [1,2], in part due to associated positive health and other outcomes for patients [3–6]. Patient-centered care shares a strong relationship to patient satisfaction [7,8]. It is considered a vital component of high-quality in health care organizations seeking to establish high patient satisfaction scores [9–11]. The Institute of Medicine's *Quality Chasm* report defined patient-centered care as "respectful of and responsive to individual patient preferences, needs, and values, and ensuring that patient values guide all clinical decisions" [12].

For this report of a coding procedure for patient-centered interviewing, we first faced the dilemma of definition. A common observation is that the first two of three functions of patient-centered interviewing (data-gathering; emotion-handling) occur early in the interview while the third function, informing and motivating patients, occurs later, the latter also usually taught at a later time in training [13]. Therefore, we opted here to focus on a coding procedure for just the first two functions, what we call the *basic patient-centered interview,* defined in the behavioral terms in Table 1 and expanded upon elsewhere [14]. We call it 'basic' because this initial part of the interview does not fully represent material related to the third function [13]. The basic interview focuses just on enhancing communication and maximizing the provider-patient relationship [15]. Because the coding method presented here stems directly from an evidence-based patient-centered method associated with both improved learning and improved patient outcomes, its importance to communication scholars is enhanced [2,16,17].

To demonstrate learning of the evidence-based patient-centered method above, the authors' group in 1998 reported a rigorous rating method [2]. Six graduate students (Communication or Psychology) rated audio- and video-tapes of residents' interactions with real and simulated patients. The detailed procedure for rating basic patient-centered interviewing skills, available from the authors, had eleven variables, each rated on an 11-point Likert-type scale. While objective with raters exhibiting acceptable levels of accuracy (mean deviation from criterion standard ratings ranged from 0.87 to 1.37 points) and consistency (mean deviation from paired raters' ratings from 0.70 to 0.98

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Table 1
Evidence-Based Patient-Centered Interviewing Method: 5 steps with 21 substeps.

STEP 1 – Setting the Stage for the Interview
1. Welcome the patient
2. Use the patient's name
3. Introduce yourself and identify specific role
4. Ensure patient readiness and privacy
5. Remove barriers to communication (sit down)
6. Ensure comfort and put the patient at ease

STEP 2 – Chief Concern/Agenda Setting
1. Indicate time available
2. Forecast what you would like to have happen in the interview; e.g., check blood pressure
3. Obtain list of all issues patient wants to discuss; e.g., specific symptoms, requests, expectations, understanding
4. Summarize and finalize the agenda; negotiate specifics if too many agenda items

STEP 3 – Opening the History of Present Illness (HPI)
1. Start with open-ended beginning question focused on Chief Concern
2. Use 'nonfocusing' open-ended skills (Attentive Listening): silence, neutral utterances, nonverbal encouragement
3. Obtain additional data from nonverbal sources: nonverbal cues, physical characteristics, autonomic changes, accouterments, and environment

STEP 4 – Continuing the Patient-Centered History of Present Illness (HPI)
1. Elicit Physical Symptom Story – Obtain description of the physical symptoms using Focusing open-ended skills
2. Elicit Personal and Social Story – Develop the more general personal/social context of the physical symptoms using Focusing open-ended skills
3. Elicit Emotional Story – Develop an emotional focus using Emotion-seeking skills
4. Respond to Feelings/Emotions – Address the emotion(s) using Emotion-handling skills
5. Expand Story – Continue eliciting further personal and emotional context, address feelings/emotions using Focusing open-ended skills, Emotion-seeking skills, Emotion-handling skills

STEP 5 – Transition to the Doctor-Centered History of Present Illness (HPI)
1. Brief summary
2. Check accuracy
3. Indicate that both content and style of inquiry will change if the patient is ready

points), efforts to develop a simpler, more objective procedure with greater reliability and efficiency are reported here.

The present study, a subset of a large interventional study [18], thus posed a second dilemma. Needing to code several hundred videotaped interactions of the basic patient-centered interview, how did we establish greater reliability, while using non-medical coders to control costs, and still capture the key personal, emotional, and empathic skills learners must acquire. After reviewing many good methods in the literature, we decided that we needed to develop our own coding method. Our aim was to code just the basic interview and to dichotomize items to enhance reliability but, to avoid losing information, to use multiple dichotomized items to represent the many personal, emotional, and empathic skills of interviewing; see Table 2.

2. Methods

2.1. Design, setting, and participants

For the research reported here, residents were evaluated once in a modern Simulation Center where they were videotaped interviewing standardized patients (SP). Twelve SPs were primarily female (n = 8), Caucasian (n = 11), and ranged in age from 38 to 58. The residents (n = 127) were mostly male (n = 77) and international graduates (n = 70) with the following ethnicity: Asian (n = 63, 48%), Caucasian (n = 34, 27%), Black (n = 6, 5%), Hispanic/Latino (n = 2, 1%), and another race or ethnicity (n = 24, 19%). At the time of data collection, residents had from zero to 3 years of training in patient-centered interviewing training, providing a wide range of skills for coders to evaluate. Each resident conducted three total interviews for the larger study, only the one involving data-gathering and emotion-handling are reported here; the other two concern informing and motivating and a behavioral health treatment model, for both of which we are developing dichotomous rating systems to be reported later [18].

Residents interviewed SPs during May, June, or August over the course of three consecutive years (2012–2014). Each SP was trained for a total of 20 h; SPs subsequently received approximately 6.5 h of training/year and their fidelity to the scenarios was verified. SPs were paid for their participation through a Health Resources and Services Administration grant. The instructions, scenarios, and scripts that SPs received are available from the authors. The project was approved by the university Institutional Review Board.

2.2. Procedure

Residents were evaluated in a scenario designed to test basic patient-centered interviewing skills, those for data gathering and relationship building [13]. Residents (n = 127) were videotaped in the interaction with a SP, resulting in 127 videotapes for coding. Each interview was allotted 15 min, and took place in rooms of a modern Simulation Center designed to simulate a real examination room. Video cameras were out of the view of both the SP and resident. SPs never interviewed more than 6 residents in one day to minimize participant fatigue.

Two students, independent of the study, were trained to rate resident-SP interactions by the authors. Over the course of two months, coders met with trainers two times per week for a total of 30 h. Coders were trained on a small selection of pilot videotapes from the larger grant project and from tapes of Year 1 medical students from their patient-centered interviewing training. Videotapes were reviewed in person, and discrepancies in coders' identification of the content and ratings (both from each other and from the trainers) were discussed until coding agreements could be reached and there was clarity on definitions, necessary to reduce subjectivity in evaluations. Trained coders required approximately 30 min per tape which were approximately 12 min in duration (range

Table 2
Patient-Centered Coding Sheet.

Setting the Agenda
1. Uses own andpatient's last name or other expressed preference (1 = No 2 = Yes)
2. Indicates time available (1 = No 2 = Yes)
3. Obtains agenda andinquires for additional items (1 = No 2 =Yes)
Physical Story
4. The resident starts open-endedly focusing on physical agenda item (1 = No 2 = Yes)
5. Addresses only physical issues volunteered by the patient (1 = No 2 =Yes)
Personal Story
6. Keeps patient focused open-endedly on personal story(ies) to elaborate them (1 = No 2 =Yes)
7. Addresses only personal topics volunteered by the patient (1 = No 2 =Yes)
8. Encourages personal information open-endedly when patients do not volunteer it and patient remains focused on the physical story (1 = No 2 =Yes)
9. Uses echoing to expand understanding of personal story (1 = No 2 =Yes)
10. Uses requests to expand understanding of personal story (1 = No 2 =Yes)
11. Uses summarizing to expand understanding of personal story (1 = No 2 =Yes)
Emotional Story
12. Keeps patient focused open-endedly on emotional story(ies) to elaborate them (1 = No 2 =Yes)
13. Addresses only emotional topics volunteered by the patient (1 = No 2 =Yes)
14. Inquires about emotions by using "how does that make you feel?" question (1 = No 2 = Yes)
15. Inquires about emotions by using other emotion seeking question (1 = No 2 =Yes)
16. Uses echoing to expand understanding of emotional story (1 = No 2 =Yes)
17. Uses requests to expand understanding of emotional story (1 = No 2 =Yes)
18. Uses summarizing to expand understanding of emotional story (1 = No 2 =Yes)
19. Uses "naming" statement in response to expression of emotion (1 = No 2 =Yes)
20. Uses specific "I understand" statement in response to expression of emotion (1 = No 2 =Yes)
21. Uses other understanding statements in response to expression of emotion (1 = No 2 =Yes)
22. Uses "praise" statement in response to expression of emotion (1 = No 2 =Yes)
23. Uses "acknowledge plight" statement in response to expression of emotion (1 = No 2 =Yes)
24. Uses "direct support [from interviewer]" statement in response to expression of emotion (1 = No 2 =Yes)
25. Uses "indirect support [from others]" statement in response to expression of emotion (1 = No 2 =Yes)
26. Uses "joining language" that indicates support to the patient in response to expression of emotion (1 = No 2 =Yes)
Indirect Patient-Centered Skills
27. Uses "impact on self" statement (1 = No 2 =Yes)
28. Uses "impact on others" statement (1 = No 2 =Yes)
29. Uses "beliefs/attributions" statement (1 = No 2 =Yes)
30. Uses "self-disclosure" statement (1 = No 2 =Yes)
General Skills
31. Indicates change in direction of questioning at end of interview to disease focus (1 = No 2 =Yes)
32. Interruptions are appropriate or nonexistent (1 = No 2 =Yes)
33. Resident determines content and direction of interview (1 = No 2 =Yes)

6–15 min). Coders' protocol was to first review the tape in its entirety, often rewinding and repeating until achieving clarity; they then reviewed the tape a second time to inform their first impressions. The overall unit of analysis was the entire patient-centered interview (doctor-centered interviewing was not included in the protocol or evaluated, nor was its integration with patient-centeredness other than evaluations reflecting Step 5). The location of each item within each of the five steps of the interview was identified by the two coders as well. Study interviews were evaluated over 15 min because that was judged to be the maximum time a physician would need to conduct an effective patient-centered interaction [14]. The coding method, however, applies to evaluating an interaction of any duration, simply tabulating the number of skills used – the more used, the better the patient-centered interaction. Duration per se is not important because a physician might use many of the skills over a short period of time.

2.3. Instrumentation

Our coding procedure is based on the previous rating procedure [2], the patient-centered method in Table 1 [14], and the literature [3,5,6,19–21]. Because we were changing the rating/coding procedure from a Likert scale to a dichotomous scale, we sought to avoid loss of information. Therefore, all authors identified as many ways as possible that we might dichotomously depict the 21 skills in the model. After several iterations and removal of confusing and redundant items, we identified 45 yes/no items. Then, during rater training in multiple sessions over 30 h, we progressively excluded 12 additional items. We retained the 33 items where coders consistently agreed with each other and with our conceptual and operational definitions; see Table 2 for final coding sheet.

Six variables were created, and variable items were assigned in proportion to their representation in the basic 5-step model in Table 1. Steps 3 and 4 of the model are the true patient-centered and most important components. Although Steps 1 and 2 are important, they simply prepare the patient for Steps 3/4, and Step 5 prepares the patient for the doctor-centered inquiry to follow. Steps 3/4, mainly the much longer Step 4, emphasize the key importance of obtaining the personal and emotional stories and responding empathically, doing this in repeated cycles over several chapters of the patient's story. Because there are numerous, different patient-centered skills used in Step 4 (echoing, open-ended requests, and summaries are used across all substeps of Step 4; emotion-seeking directly and indirectly are used extensively in the repeated cycles of the story; and emotion-handling skills [naming, understanding, respecting, supporting] are used

similarly), there are many more items reflecting them than are found in other steps. While a Likert scale captures these generally, a dichotomous scale must list them separately, otherwise information is lost. This is a real benefit because it can identify specific instances of skills rather than a general rating over many skills.

Because the primary (but not only) intent of the patient-centered interview is to produce personal and emotional information, and to respond to it empathically, these variables have greater behavioral item representation. For example, items 12–18 (Table 2) evaluate the key skills required to initially elicit and then understand an emotion; items 19–26 evaluate the various behaviors required to test an interviewer's empathic skills. Thus, where other coding scales may have only one item to represent a variable such as empathy, 25 of the 33 items (items 6–30) reflected the key personal, emotional, and empathic parts of the interview. This method offers a trade-off. While it dichotomizes rating of individual items, it includes a high number of items to tap into each construct. A highly detailed codebook was developed, in which each item in the coding scheme is described in detail and included examples to help coders understand the items. Coders received the conceptual and operational definitions of each variable, provided next, as well as a glossary of terms. The coding manual is available from the authors, and Table 3 provides an example of instructions for coding item number 9.

Variable 1 (*Setting the Agenda*) has 3 items reflecting the first two steps of the five-step interview, the portion that prepares for the patient-centered component to follow.

Variable 2 (*Physical Story*) has 2 items reflecting both Steps 3 and 4 of the interview and must be elicited using open-ended skills. Although an essential patient-centered variable, physical symptoms often play a lesser role than the personal and emotional stories to follow.

Variable 3 (*Personal Story*) has 6 items, defined as representing the *personal, non-emotional* story, reflecting the personal context of the physical story. Residents who used open-ended skills (echoing, requests, summarizing) to facilitate the patient's personal story while not inserting their own ideas into the conversation were rated 'yes' on each item in Variables 2 and 3.

Variable 4 (*Emotional Story*) has 15 items, defined as the *personal, emotional* component of the patient's story, that reflect the important emotional context of the physical and personal stories. In addition to continued use of open-ended skills, residents used two additional sets of skills: emotion-seeking and emotion-handling, the latter heavily rated with 8 items (items 19–26).

Variable 5 (*Indirect Patient-Centered Skills*) has 4 items reflecting less frequently used skills for eliciting both personal and emotional stories and facilitating the flow of the interview. They complement the other patient-centered skills.

Variable 6 (*General Skills*) has 3 items and reflects Step 5 of the interview with one item and two additional items are meta-level skills that apply across the entire interview.

2.4. Validity

Content validity is especially important because the coding scheme is a behavioral observation assessment that, to maintain validity, must stay true to the patient-centered interviewing method itself. The authors constructed the coding procedure to mirror the evidence-based patient-centered method, and one of the authors (RCS) designed the method [14] (see Table 1) and established its research base [2,16,17,22,23]. The coding scheme also stems from the earlier, valid coding method. Finally, when data are available from the larger interventional study, of which this report is a part, hundreds of tapes will be evaluated to further establish predictive validity by coding tapes pre/post training in both the trained and control groups [18]. *Construct validity*, the "validity of inferences about unobserved variables (the constructs) on the basis of observed variables (their presumed indicators)," comprises three components: (1) logical analysis, (2) internal-structure analysis, and (3) cross-structure analysis [24]. Only logical analysis applies here because an internal structure analysis cannot be conducted on a dichotomous measure, and future research is needed to address the cross-structure analysis.

The *first* aspect of the logical analysis is to scrutinize the definition of the construct [24]. Each variable of the patient-centered coding scheme and its corresponding conceptual definition was developed based on careful analysis of the patient-centered method and the literature from which the method was derived [14]. The *second* aspect of the logical analysis concerns item content, ensuring that items reflect their given construct's (variables 1–6) definition and are appropriate and consistent with that definition [24]. Each item of the coding scheme was created after the variable construct and its definition were established. This allowed construction of precise items, based on the patient-centered method, that directly reflected the corresponding variable and accurately reflected this construct's definition, consistent also with the literature [3,5,6,19–21]. Additionally, the coders reviewed each item in conjunction with the item's definition to ensure that the item not only made sense in its

Table 3
Example From Code Book: Code 9.

The resident uses echoing to expand understanding of personal story
(Code: 1 = No, 2 = Yes)
The resident uses this focusing, open-ended skill to maintain the focus on the personal story. Reflection (echoing) signals that the interviewer has heard what the patient said by repeating a word or phrase that was just said. It encourages the patient to proceed and focuses the patient on the word or phrase echoed. For Code 9, the echo must be about the personal story (not the physical or emotional story).
An echo involves the resident echoing a word or a couple of words the patient has just said, and then remains silent, enticing the patient to go on. It is not considered an echo if the resident repeats a word, but then asks a new statement after the word, such as "Tired? When did all of that start?" Although the resident echoed a word, they were not using the echo as an open-ended skill to expand the patient's personal story.
Examples:
Patient: "Well, my boss has been nagging me constantly this week"
Resident: "Nagging?"
Patient: "My wife and I have four children, and I work at the local grocery store while she takes care of the kids"
Resident: "Grocery store?"
Patient: "I was at the baseball game when my back really started hurting, we were sitting in the stands and the pain jolted down my back"
Resident: "Baseball game?"
BAD Example:
Patient: "I have just been so tired recently"
Resident: "Tired? When did that start?"

given context, but also that they felt able to use the item accurately while coding patients. Examples were added to the coding scheme to help ensure that the coders understood the item in the medical interview context. Any item that was confusing or that the coder felt unable to use accurately was re-phrased or dropped from the measure. The *third* aspect of logical analysis includes examining the method of measurement, directions to coders, and scoring [24]. Each of the variables contains multiple items, endorsed by quantitative researchers [24]. All items were measured the same dichotomous way. Raters were given in-depth instructions during intensive training sessions and they were given a codebook complete with descriptions and examples that could be referred to as needed; available from the authors.

2.5. Statistical analysis

Guetzow's U is a statistic that measures the reliability of the number and location of units identified by two independent coders; it is used to obtain an estimate of unitizing reliability by observing the number of disagreements among coders [25]. Cohen's Kappa is a reliability coefficient that takes into account chance agreement and was used to measure inter-rated reliability [26]. Inter-rater reliability was established following training by having newly trained coders independently rate 25 randomly selected videotapes from the study set of 127 videotapes. After establishing reliability, coders recoded all instances where there had been disagreement and resolved it, and coders continued coding videotapes on their own. Reliability was then monitored by dual codings of 5 tapes for every 30 tapes rated in the remaining study set. Percent agreement was calculated for each item, variable, and overall.

3. Results

Guetzkow's U ranged from a very acceptable 0.00–0.087. The kappa for all items on 25 videotapes was 0.90. Overall percent of

Table 4
Statistical Results for all Patient-Centered Variables and Items.

No.	Item	Percent of Agreement	Guetzkow's U
	Setting the Agenda (Kappa = .941)		
1	Uses own *and* patient's last name or other expressed preference	100	0.000
2	Indicates time available	100	0.000
3	Obtains agenda *and* inquires for additional items	92.0	0.041
	Physical Story (Kappa = 1.00)		
4	The resident starts open-endedly focusing on physical agenda item	100	0.000
5	Addresses only physical issues volunteered by the patient	100	0.000
	Personal Story (Percent of Agreement = 99.3%)		
6	Keeps patient focused open-endedly on personal story(ies) to elaborate them	100	0.000
7	Addresses only personal topics volunteered by the patient	100	0.000
8	Encourages personal information open-endedly when patients do not volunteer it and patient remains focused on the physical story	100	0.000
9	Uses echoing to expand understanding of personal story	96.0	0.020
10	Uses requests to expand understanding of personal story	100	0.000
11	Uses summarizing to expand understanding of personal story	100	0.000
	Emotional Story (Kappa = 0.86)		
12	Keeps patient focused open-endedly on emotional story(ies) to elaborate them	100	0.000
13	Addresses only emotional topics volunteered by the patient	100	0.000
14	Inquires about emotions by using "how does that make you feel?" question	100	0.000
15	Inquires about emotions by using other emotion seeking question	96.0	0.020
16	Uses echoing to expand understanding of emotional story	100	0.000
17	Uses requests to expand understanding of emotional story	96.0	0.020
18	Uses summarizing to expand understanding of emotional story	100	0.000
19	Uses "naming" statement in response to expression of emotion	100	0.000
20	Uses specific "I understand" statement in response to expression of emotion	96.0	0.02
21	Uses other understanding statements in response to expression of emotion	96.0	0.020
22	Uses "praise" statement in response to expression of emotion	92.0	0.041
23	Uses "acknowledge plight" statement in response to expression of emotion	84.0	0.087
24	Uses "direct support [from interviewer]" statement in response to expression of emotion	96.0	0.020
25	Uses "indirect support [from others]" statement in response to expression of emotion	92.0	0.041
26	Uses "joining language" that indicates support to the patient in response to expression of emotion	92.0	0.041
	Indirect Patient-Centered Skills (Kappa = 1.00)		
27	Uses "impact on self" statement	100	0.000
28	Uses "impact on others" statement	100	0.000
29	Uses "beliefs/attributions" statement	100	0.000
30	Uses "self-disclosure" statement	100	0.000
	General Patient-Centered Skills (Kappa = 0.868)		
31	Indicates change in direction of questioning at end of interview to disease focus	100	0.000
32	Interruptions are appropriate or nonexistent	100	0.000
33	Resident dominates content and direction of interview	84.0	0.087

agreement for all items was 97.5%; percent of agreement was determined because Cohen's Kappa cannot be calculated if either coder is constant, or the coder uses the same code for all items of a particular variable. Since one of the coders was constant on the Personal Story variable, percent of agreement is reported, see Table 4. Percent of agreement for the *Personal Story* variable was 99.3%. Kappas for the remaining applicable variables were: *Agenda Setting* = 0.94; *Physical Story* and *Indirect Patient-Centered Skills* = 1.00; *Emotional Story* = 0.86; *General Patient-Centered Skills* = 0.86.

4. Discussion, conclusion, and practice implications

4.1. Discussion

This research achieved a highly reliable (and valid) coding procedure by changing from the more subjective ratings that characterize Likert scales [2] to more objectively coded dichotomized items, still with an element of subjectivity but less than with Likert scales. While dichotomizing risks losing information in complex areas like patient-centered interviewing, the research compensated by using multiple items in areas of particular importance – skills for obtaining the personal and emotional story and for responding empathically [14]. Thus, for example, where a typical checklist might address empathy with one item only, this method strongly weights empathy by using 8 items (items 19–26), and there are a total of 21 items reflecting the personal and emotional dimensions of the interview (items 6–26).

While the authors' review found several rating and coding methods, their applicability for this research to evaluate the basic patient centered interview required careful consideration. For example, the research team opted against the Calgary-Cambridge Guides and the Maastricht History Taking and Advice Checklist because their very productive use has largely been restricted to teaching rather than research [27–29]. The Roter Interactional Assessment System and the Verona Medical Interview Classification System, on the other hand, are highly specialized, gold standard research rating systems. Nevertheless, these ratings must be conducted by extensively trained investigators, usually off-site, who are not part of the research team, and this incurs cost [30,31]. Two other methods, however, more closely matched the needs of this research. We had to resolve the dilemma of dichotomous vs. Likert rating scales and the associated concern of fully representing basic patient-centeredness. Our rationale for deciding to develop a new coding method follows. The Four Habits Coding Scheme [32] has proven useful and is rated by the research team. However, our research sought to achieve greater reliability than reported with the Four Habits' more subjective Likert rating system (23 items on a 1–5 scale). Its inter-rater reliabilities for each of the four variables (habits 1–4) were based on Pearson correlations and were, respectively, 0.7, 0.8, 0.71, and 0.69 (overall 0.72). More promising for the reliability needs of the research reported here, the SEGUE coding system dichotomizes items to form a checklist (yes/no) of 32 communication tasks that has been used effectively and has high reliabilities and established validity [33]. Problematic for our research, though, its items did not meet our interest in comprehensively highlighting the personal and emotional dimensions; e.g., only one question on empathy. It also covers material beyond our focus on the basic interview with 11 items on treatment and providing information. In the end, the coding method reported here was selected because it offered the simplicity and high reliability of a checklist but at the same time is weighted so as not to miss the most important personal and emotional features of the basic patient-centered interaction. For researchers with similar requirements, this method can be recommended. Not necessarily better, it is a different solution to one dilemma of assessment: achieving high reliability while being comprehensive.

This coding method also has a strong conceptual base: it mirrors the content of a behaviorally-defined patient-centered interviewing method [14] demonstrated in RCTs to be learnable [2] and associated with improved health outcomes [16,17]. Because the interviewing method derives from and behaviorally operationalizes previous consensus conferences and other literature [3,5,6,19–21], it encompasses the broad spectrum of essential patient-centered skills, so that the coding method can be used to rate all basic patient-centered practices, not just those using the specific evidence-based method.

The application of this or other rating methods merits comment for the field of provider-patient communication [34]. A recent report shows that, of 327,219 RCTs conducted by April 2010, RCTs primarily involving a patient-centered approach were nearly non-existent [34]. As the most rigorous research design and the bottom line for declaring a study evidence-based [35], it seems essential, if the field of patient-centered communication is to progress, that it incorporate the RCT and other interventional designs in interviewing and other patient-centered research [34,36]. A reliable, valid coding method provides the opportunity. Using a RCT design in educational research, for example, an investigator could evaluate training of patient-centered interviewing instruction by using the coding method to compare learning of those randomized to the training group to those in the control group, as a previous study exemplifies [2]. Outside medical education, another need for RCT studies exists in clinical research of patient-centeredness [34]. For example, the investigator could compare patients randomized to a patient-centered intervention to non-patient-centered controls where both groups received the same medication for, say, diabetes, as further discussed and exemplified elsewhere [22,23,36]. Also, we can study the mechanisms between patient-centeredness and an improved outcome, for example, the unique fMRI or linguistic changes accompanying an effective patient-centered interview or we could seek mediators, such as patient satisfaction, of an improved outcome from being patient-centered, well-illustrated elsewhere [17,22,23]. A coding method also can be used to develop surrogate evaluation measures. For example, when high scores on a proposed patient satisfaction questionnaire are demonstrated to correspond to high scores from a rating of the interaction, the questionnaire can be considered research-based. Similarly, a self-efficacy questionnaire that rates one's confidence in conducting patient-centered skills is research-based when its results correspond to ratings of the interaction.

The limitations of this study are: 1) not comparing the coding procedure to other measures of learning about the physician-patient interaction, such as learner self-efficacy and knowledge; 2) not showing it responsive over time to training, although small pilot studies demonstrated that it was; and 3) not comparing it to patient measures such as satisfaction or health outcomes. In the larger study from which this report derives, many of these results are expected in the next year. While developed for use by raters with little or no training and intended for coding by non-medical people, a possible limitation is using undergraduate students rather than medical professionals. On the other hand, during pilot testing, raters accurately distinguished trained from untrained interviewers, thus showing that trained and untrained residents act differently, and raters were able to detect those differences accurately. Nevertheless, this assumption requires future testing and verification. Further, only residents were studied and it is possible that different results would be obtained with students, nurses, or practitioners. These groups should be studied in the future. Although the present procedure provided a measure of specific behaviors, a head-to-head evaluation of the present procedure vs. Likert scale ratings of the same material also will be needed to support the view that information was not lost by weighting key variables. Such a study will inform whether the

present use of multiple items offsets not being able to include context, such as tone of voice, which raters using Likert scales can include. Comparison of this method to other coding and rating methods for the ability to identify the key skills of the basic patient-centered interview also will be an important future study, if costly.

Finally, it is important that this coding procedure does not involve the entire patient-centered interview, rather just the first two functions of the interview, data-gathering and emotion-handling. We call it the 'basic' patient-centered interview because instruction in beginning interviewing and proficiency with it typically occur before addressing the 3rd function (informing/motivating) and because the first two functions typically occur considerably before the third in a given interview. We believe it is important to separate their methods and evaluations with the idea that this will be more useful to educators and researchers and less confusing to learners; e.g., we teach basic interviewing, as defined here, long before we teach informing and motivating.

5. Conclusion

This study reports a coding method that uniquely is both highly reliable and fully representative of patient-centered skills. It also is a coding method focused just on the patient-centered interaction and one where non-medical raters easily are trained to high reliability. It is anchored in a patient-centered method associated with improved health outcomes. The authors propose that this method can be recommended as a criterion standard research rating method.

Practice implications

This is a basic research paper in communication with little direct practice implication. Nevertheless, its use as a criterion standard for the research development of practical, every day questionnaire assessments of patient-centered practices make it relevant to educators, clinicians, and hospital administrators.

Conflict of interest

The authors have no actual or potential conflict of interest, including any financial, personal, or other relationships, with other people or organizations within three years of beginning the submitted work that could inappropriately influence or be perceived to influence this work.

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