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The Importance of Measuring Strength-of-Preference Scores for Health Care Options in Preference-Sensitive Care

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Abstract

Objective—The objective was to determine whether a paired-comparison/leaning scale method: a) could feasibly be used to elicit strength-of-preference scores for elective health care options in large community-based survey settings; and b) could reveal preferential sub-groups that would have been overlooked if only a categorical-response format had been used.

Study Design—Medicare beneficiaries in four different regions of the United States were interviewed in person. Participants considered 8 clinical scenarios, each with 2 to 3 different health care options. For each scenario, participants categorically selected their favored option, then indicated how strongly they favored that option relative to the alternative on a paired-comparison bi-directional Leaning Scale.

Results—Two hundred and two participants were interviewed. For 7 of the 8 scenarios, a clear majority (> 50%) indicated that, overall, they categorically favored one option over the alternative(s). However, the bi-directional strength-of-preference Leaning Scale scores revealed that, in 4 scenarios, for half of those participants, their preference for the favored option was actually “weak” or “neutral”.

Conclusion—Investigators aiming to assess population-wide preferential attitudes towards different elective health care scenarios should consider gathering ordinal-level strength-of-preference scores and could feasibly use the paired-comparison/bi-directional Leaning Scale to do so.

Keywords

preference measurement; strength-of-preferences; preference-sensitive care; geographic variations; Medicare population; in-person interview

INTRODUCTION

In preference-sensitive clinical situations, the “best” therapeutic strategy cannot be clearly identified, because scientific evidence is missing, weak, or contradictory, or there is wide-ranging opinion about whether the different options' potential benefits outweigh their possible risks (1). Under these circumstances, strategy selection depends on patients' personal attitudes towards those risk/benefit “trade-offs”. The surgical management of early-stage breast cancer by lumpectomy or mastectomy (2), the treatment of localized prostate cancer with radiation therapy or surgery (3), and surgical versus non-surgical interventions for chronic lower back pain (4) are examples of preference-sensitive choices.

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Geographic variations in utilization rates for preference-sensitive care have been observed internationally (5), and in the United States' Medicare program (6). These variations could be *warranted* or *unwarranted* (7). A variation is *warranted* when it reflects true variation in the population's informed attitudes towards the relevant options, but *unwarranted* when their attitudes are uninformed, unrecognized, or ignored by health care providers. Since unwarranted variations in preference-sensitive care may indicate short-falls in patient-centered care (8), disregard for patient safety (9), or violations of the principles of informed consent (10), health services researchers may be strongly motivated to identify where such variations are occurring.

Measurement Approaches

There are various ways to undertake this identification process.

Categorical-Response Formats—One approach involves assessing a population's overall attitudes towards the options of interest, then examining whether these reports line up with the utilization rates for those options. For example, in the U.S., telephone surveys have collected preference data from large samples in different geographic regions (11) (12). Respondents presented with clinical scenarios indicated, for each scenario, which optional action they would adopt, if they were actually experiencing that scenario.

This categorical-response format is a clear, convenient, cost- and time-efficient way to characterize preference distributions in large-scale studies (13). However, this format does not yield strength-of-preference scores (see below), so it cannot gauge the extent to which respondents favor their chosen option relative to the other options.

The need to collect strength-of-preference scores is a subtle measurement problem. Suppose populations of patients with the same clinical condition but dwelling in different regions (A and B) identify which of interventions X and Y is their categorically favored option. Suppose two results emerge:

- 1: a large majority of population A favors option X, and utilization rates indicate they are actually receiving X;
- 2: a large majority of population B favors option Y, and utilization rates indicate they are actually receiving Y.

The investigator concludes that any across-region variations in the rates for X and Y are warranted.

However, in these populations there may be sub-groups who, although categorically favoring their region's most-popular option, actually hold that preference weakly. Exclusive use of categorical-response formats would fail to detect such sub-groups, and the conclusion that the observed variations are warranted could be erroneous.

Strength-of-Preference Scores—An alternative approach involves using paired-comparisons (14) in conjunction with measurement scales. Basically, the respondent considers a scenario offering two health care options, selects her favored option, then indicates, on an ordinal scale, how much more she favors that option relative to the alternative. Her position on the scale yields a relative strength-of-preference score for her favored option.

This approach is considered psychologically similar to the way people compare different options in day-to-day life (15)(16)(17); also, it may reveal preferential sub-groups within a population. However, compared with using categorical response formats, eliciting relative

strength-of-preference scores requires close attention to interviewer training and data quality (13).

Purpose

The study purpose was two-fold. First, from a feasibility standpoint, we wished to see whether a paired-comparison/scalar approach to eliciting strength-of-preference scores for different health care options could be carried out using in-person interviews in a large community-based study design. Second, from a measurement standpoint, we wished to see whether this approach could reveal preferential sub-groups that would have been overlooked if only a categorical-response format had been used.

METHODS

In-person interviews were conducted with Medicare beneficiaries residing in different regions of the U.S. The study was approved by the Committee for the Protection of Human Subjects at Dartmouth Medical School.

Study Sample

A large national telephone survey of Medicare beneficiaries had preceded our study; it provided the sampling frame from which our study participants were drawn (11)(12)(18). Beneficiaries were eligible for our study if they had participated in the earlier telephone-based survey, were aged 65 years or older on July 1, 2003, and were non-institutionalized English- or Spanish-speaking residents of a U.S. Hospital Referral Region (as defined by the Dartmouth Atlas Group) in one of four geographic regions (Miami, FL; Minneapolis, MN; Rochester, NY; and West Long Island, NY) (6). These regions were selected because their Medicare populations' utilization rates for preference-sensitive services differ widely. If, in fact, those differing rates are driven by differences in the regional populations' underlying preferential attitudes towards such services, this sampling strategy would augment the likelihood of observing wide distributions of strength-of-preference scores.

Procedures

Trained Community Interviewers (CIs) conducted 60-minute interviews in participants' homes or other agreed-upon locations. The CIs used a standardized Interview Schedule and paper-based Participant Questionnaires; preparation of materials was based on previous field work (19)(20).

Eight clinical situations (i.e., “scenarios”; see Table 1)—identical to those already used in the national telephone survey—were presented to participants. Three involved choices about seeking medical attention, and five about care at the end of life.

For each scenario, the participant considered two (or more) options, then categorically indicated which option she would favor if actually faced with this choice. Next, the participant was presented with a “Leaning Scale” (LS) (21). This LS consisted of a bi-directional seven-point (the points appeared as boxes) scale with a neutral box-point at its middle and, at either end, a label indicating one of the two relevant options. The participant checked a box on the scale indicating how much she preferred her favored option relative to the alternative option. See Figure 1 for an illustrative example.

Data Analysis

Initial Steps—Participants who did not understand the clinical context, could not indicate an initially-favored option, or refused to answer the questions were excluded from the analysis. Demographic and socio-economic characteristics were summarized. Scenario

response rates and the frequencies at which the options were initially favored were calculated.

LS Scores

Identifying the LS Scores of Primary Interest: In three scenarios, participants considered three options, and LS scores were obtained for each possible pair-wise comparison. Thus, for each triadic-option scenario, three sets of LS scores were generated. To foster clarity and adequate observation frequencies, in each triadic-option scenario our subsequent analysis focused on the LS score observed when a participant considered the choice between the two options that categorically had been the first- and the second-most frequently favored by the full sample of participants.

Describing the LS Scores: For each scenario, descriptive statistics summarized the distributions of the LS strength-of-preference scores ascribed to the first- and second-most frequently favored options.

Converting the LS Scores: For each scenario, the response scores on the bi-directional LS were converted into a common, uni-directional strength-of-preference scale. This was done so that, for each scenario, we could aggregate all of the participants' responses; aggregation was necessary in order to describe each scenario's distribution of LS scores, and to identify possible sub-groups within a distribution.

For consistency, in each scenario we oriented this conversion relative to the first-most frequently favored option. Accordingly:

1. those who categorically preferred the first-most frequently favored option and indicated a score for that option of 7, 6, 5, 4, 3, 2, or 1 on the bidirectional LS were assigned a recalibrated score of 15, 14, 13, 12, 11, 10 or 9, respectively;
2. those who indicated a neutral score of 0 on the bidirectional LS were assigned a recalibrated score of 8; and
3. those who categorically preferred the second-most frequently favored option and indicated a score for that option of 1, 2, 3, 4, 5, 6, or 7 on the bidirectional LS were assigned a recalibrated score of 7, 6, 5, 4, 3, 2, or 1, respectively.

Thus, for each scenario: a) all participants' converted scores—regardless of their personal overall favored option—ranged from a score of 15 (a very high strength-of-preference score for the first-most frequently favored option) to a score of 1 (a very low strength-of-preference score for the first-most frequently favored option); and b) descriptive statistics were used to summarize the distribution of these converted LS strength-of-preference scores.

RESULTS

Participant Characteristics

The CIs attempted to contact 427 potential participants who had, during the telephone survey, expressed interest in the in-person interviews; ultimately, 202 (47%) agreed to participate.

Our overall sample (see Table 2) resembled the general Medicare population, which tends to be female (56%), white (78%), between the ages of 65–84, and living with their spouse (49%) (22). Accordingly, our sample included Medicare beneficiaries with a range of

different socio-demographic and self-assessed health characteristics who could potentially report a range of different preferential attitudes.

Frequently-Favored Options and Their LS Scores

Seeking Medical Attention—See Figures 2 a), b), and c).

Scenario 1 presented the choice between receiving regular care from one general doctor or from multiple specialists. Sixty-nine percent ($n = 136$) favored one general doctor; of these, 50% ($n = 60$) indicated a strong preference (i.e., a LS score of 7) for that option. Of the 31% ($n = 60$) who favored receiving regular medical care from multiple specialists, 41% ($n = 25$) indicated a strong preference (i.e., a LS score of 7) for this option. Eleven, or 6% of the entire sample, were preferentially neutral (i.e., a LS score of 0).

Scenario 2 presented three options about seeking care for a lingering cough after the flu: waiting over a week, waiting a week, or seeking care right away. Forty-eight percent ($n = 96$) favored waiting a week, 39% ($n = 78$) favored seeking care right away, and 13% ($n = 13$) favored waiting longer than a week.

We focused on the particular LS anchored by waiting a week (the first-most frequently favored option) and by seeking care right away (the second-most frequently favored option). Of those favoring waiting a week, 30% ($n = 25$) indicated a strong preference for that option. Of those favoring seeking care right away, 42% ($n = 31$) indicated a strong preference for this option. Seven, or 5% of the entire sample, were preferentially neutral.

Scenario 3 presented three options about seeking care after a single experience of chest pain after climbing a flight of stairs: waiting over a week, waiting a week, or seeking care right away. Seventy-one percent ($n = 139$) favored seeking care right away, 27% ($n = 53$) favored waiting a week, and 2% ($n = 4$) favored waiting a longer than a week.

We focused on the particular LS anchored by seeking care right away (the first-most frequently favored option) and by waiting a week (the second-most frequently favored option). Of those favoring waiting a week, 18% ($n = 8$) indicated a strong preference for that option. Of those favoring seeking care right away, 66% ($n = 91$) indicated a strong preference for this option. Five, or 3% of the entire sample, were preferentially neutral.

End-of-Life Care—See Figures 3 a), b), c), d), and e).

Scenario 4 presented three options for site of care at the end of life: own home, nursing home, or hospital. Eighty-seven percent ($n = 165$) favored their own home, 7% ($n = 14$) favored a hospital, and 6% ($n = 12$) favored a nursing home.

We focused on the particular LS anchored by one's own home (the first-most frequently favored option) and by hospital (the second-most frequently favored option). Of those favoring their own home, 75% ($n = 118$) indicated a strong preference for that option. Of those preferring a hospital, 45% ($n = 5$) indicated a strong preference for this option. Three participants, or 2% of the entire sample, were preferentially neutral.

Scenario 5 presented the choice between a no-drugs option and a drug option that would extend life for 30 days but might reduce quality-of-life. Ninety-three percent ($n = 180$) favored the no-drugs option, while 7% ($n = 13$) favored the drug option. Of those favoring the no-drug option, 61% ($n = 110$) indicated a strong preference for that option. Of those favoring the life-extending drug option, 62% ($n = 21$) indicated a strong preference for this option. Eight (4%) of the entire sample were preferentially neutral.

Scenario 6 presented a similar 2-option choice, except that the drug option offered an improvement in the quality-of-life but with a risk of reducing the length of life. Seventy-three percent ($n = 138$) favored the drug option, while 25% ($n = 46$) favored not taking drugs. Of those favoring the no-drug option, 59% ($n = 23$) indicated a strong preference for that option. Of those favoring the quality-of-life-improving drug option, 61% ($n = 78$) indicated a strong preference for this option. Seven (4%) of the entire sample were preferentially neutral.

Scenario 7 presented the choice between a no-respirator option and placement on a respirator extending life for 1 month. Eighty-seven percent ($n = 169$) favored the no-respirator option, while 13% ($n = 26$) favored the respirator option. Of those favoring the no-respirator option, 65% ($n = 110$) indicated a strong preference for that option. Of those favoring the respirator option, 35% ($n = 9$) indicated a strong preference for this option. Six, or 3% of the entire sample, were preferentially neutral.

Scenario 8 presented the choice between a no-respirator option and placement on a respirator extending life for 1 week. Eighty-seven percent ($n = 170$) favored the no-respirator option, while 11% ($n = 22$) favored the respirator option. Of those favoring the no-respirator option, 73% ($n = 124$) indicated a strong preference for that option. Of those favoring the respirator option, 57% ($n = 13$) indicated a strong preference for this option. Six, or 3% of the entire sample, were preferentially neutral.

Converted Strength-of-Preference Scores for Most-Frequently-Favored Options

The raw bi-directional LS scores were converted into a common, uni-directional strength-of-preference scale oriented towards the first-most frequently favored option. On this converted scale, “15” indicates a very high strength-of-preference for the first-most frequently preferred option, while “1” indicates a very low strength-of-preference for this option.

Figure 4 uses a box and whisker plot to illustrate the distribution of these converted scores. Distributions are depicted by using the median scores and the first and third quartiles to construct the “boxes”, and by using the ends of the ranges to construct the “whiskers”. The box length represents the middle 50% (i.e., between the 1st and 3rd quartiles) of the distribution of converted LS scores for that scenario.

Seeking Medical Attention—In *Scenario 1*, the first-most favored option was receiving regular medical care from one general doctor; converted strength-of-preference scores ranged from 1 to 15, with a median of 13; half of the scores (i.e., between the 1st and 3rd quartiles) fell between 4 and 15.

In *Scenario 2*, the first-most favored option was waiting a week to seek care for a lingering cough; converted strength-of-preference scores ranged from 1 to 15, with a median of 10; half of the scores fell between 2 and 13.

In *Scenario 3*, the first-most favored option was seeking care right away for chest pain; converted strength-of-preference scores ranged from 1 to 15, with a median of 14; half of the scores fell between 8 and 15.

End-of-Life Care—In *Scenario 4*, the first-most favored option was getting care at the end of life at home; converted strength-of-preference scores ranged from 1 to 15, with a median of 15; half of the scores fell between 14 and 15.

In *Scenario 5*, the first-most favored option was receiving no life-extending drugs; converted strength-of-preference scores ranged from 1 to 15, with a median of 15; half of the scores fell between 13 and 15.

In *Scenario 6*, the first-most favored option was to receive quality-of-life improving drugs, even with a reduction in the length of life. Converted strength-of-preference scores ranged from 1 to 15, with a median of 14; half of the scores fell between 8 and 15.

In *Scenario 7*, the first-most favored option was not to be put on a respirator, even if it offered a one-month life extension. Converted strength-of-preference scores ranged from 1 to 15, with a median of 15; half of the scores fell between 12 and 15.

In *Scenario 8*, the first-most favored option was not to be put on a respirator, even if it offered a one-week life extension. Converted strength-of-preference scores ranged from 1 to 15, with a median of 15; half of the scores fell between 13 and 15.

DISCUSSION

There are strong quality-improvement, patient safety, and ethical motivations for researchers to identify and characterize unwarranted geographic variations in utilization rates for preference-sensitive health care. In the U.S., some have argued that revealing and reducing this kind of unwarranted variation could reduce costs in the publicly-funded Medicare system (23). However, the measurement strategies needed to assess accurately where such unwarranted variation is occurring aren't yet rigorously developed. This study took an initial step towards addressing this methodological question.

The paired-comparison/LS approach appears to be a feasible elicitation technique. Among this elderly, culturally-diverse sample of Medicare beneficiaries, very few participants were unwilling or unable to select a categorical preference or report strength-of-preference scores on the LSs. There were few problems with the recording, compilation, and analysis of the categorical and the LS response data.

For seven of the eight scenarios, clear majorities indicated they categorically favored one option over the alternative(s). For Scenario 2—which asked about seeking care for a lingering cough—a large majority for the categorically most-favored option was not observed.

After converting the bi-directional LS scores onto common, uni-directional strength-of-preference scales (oriented towards the categorically most-frequently favored options), two main observations were noted. Wide ranges of converted strength-of-preference scores (from 1 to 15) were observed for all eight scenarios (this is a logical consequence of our conversion strategy), and the widths of the interquartile distributions varied, depending on the scenario.

Implications

Researchers who elicit only categorically-reported overall preferences could see large majorities favoring one option over the other, and conclude that these individuals all hold the same preference to a strong degree. However, the distributions of the ordinal-level strength-of-preference scores observed here indicate that, in some scenarios, majorities who report they favor the most-popular option actually hold this overall preference relatively weakly. These “shades of grey” attitudes towards what appears to be an overwhelmingly favored option could imply that notable numbers of people might switch to favoring the

alternative if they were actually experiencing the decision situation, or were given more information or more time to contemplate the options.

These possibilities are important when we examine our motivations for measuring population-wide preferences. Suppose we aspire not merely to identify areas with unwarranted variation in preference-sensitive care, but also to intervene—as advocated by others—by introducing, for example, patients' decision support services to help rectify those unwarranted variations (23)(24).

If, on one hand, scores are predominantly neutral, this may indicate either a) that all of these patients are truly preferentially neutral about the options, or b) that some patients are uncertain about their attitudes towards the treatment options of interest. One could argue that this second sub-group might particularly benefit from a decision support service.

On the other hand, if scores indicate a predominantly strong preference for one intervention, but these patients actually are receiving a different intervention, then this mismatch might indicate that an intervening decision support service is needed. Such decision support services are already underway in many different countries, including the U.S. (25), Canada (26), the United Kingdom (27), and Germany (28).

However, if we fail to elicit strength-of-preference scores in the first place, we could fail to identify sub-areas in which there are hidden gaps between the care that sub-groups are actually receiving and the care they actually would strongly prefer either to have or to forgo. Thus, the subsequent introduction and dissemination of patients' decision support services could be poorly targeted, and, consequently, resources would be inefficiently allocated.

Potential Limitations

The study's scenarios represented decision situations that varied in terms of “what's at stake”; their selection was based upon observations reported in the Dartmouth Atlas of Health Care (6). However, the scenario set involved only two elective care contexts, and the implications drawn from these observations cannot be generalized to other contexts. Future studies should use scenarios reflecting a broader array of elective contexts.

Future studies could also use different techniques for measuring ordinal-level strength-of-preference scores—such as the Analytic Hierarchy Process (29), or conjoint analysis (30), or classic decision analytic trees (31). However, it could be problematic to use these techniques in large surveys involving in-person interviews, because they require intensive interviewer training, are cognitively challenging, and are more time- and energy-consuming to be carried out.

Finally, for those scenarios with triadic option sets, the analysis used the strength-of-preference score observed when a participant chose between the two options that were most frequently favored by the full sample of participants. This analytic approach—compared to one that uses the individual participant's first- and second-favored options—may under-report the frequency of membership in any weakly-held preferential sub-group.

Conclusions

This study is a step towards understanding one strategy for assessing population-wide preferential attitudes towards elective health care options, as well as the pitfalls encountered when drawing inferences from those assessments. Investigators aiming to carry out such assessments should consider gathering ordinal-level strength-of-preference scores, and could feasibly use the paired-comparison/LS strategy to do so.

REFERENCES

1. O'Connor AM, Llewellyn-Thomas HA, Flood A. Modifying unwarranted variations in health care: shared decision making using patient decisions aids. *Health Affairs*. Oct.2004 :63–72. (Web Exclusive):Var.
2. Collins ED, Moore C, Clay K, Kearing S, O'Connor A, Llewellyn-Thomas H, et al. Can women with early-stage breast cancer make an informed decision for mastectomy? *Journal of Clinical Oncology*. 2009; 27(4):519–525. [PubMed: 19114703]
3. Barry M. The prostate cancer treatment bazaar. *Archives of Internal Medicine*. 2010; 170(5):450–452. [PubMed: 20212181]
4. Deyo R. Back surgery - who needs it? *The New England Journal of Medicine*. May 31; 2007 356(22):2239–2243. [PubMed: 17538083]
5. Wennberg JE. Understanding geographic variations in health care delivery. *The New England Journal of Medicine*. 1999; 340(1):52–53. [PubMed: 9878647]
6. The Dartmouth Institute for Health Policy and Clinical Practice. The Dartmouth Atlas of Health Care [Internet]. [cited 2011 Apr 12];Available from: <http://www.dartmouthatlas.org/>
7. Wennberg J, Fisher E, Skinner J. Geography and the debate over Medicare reform. *Health Affairs*. Web Exclusive. Feb.2002 :W96–114.
8. Institute of Medicine. Crossing the quality chasm: a new health system for the 21st century. National Academy Press; Washington, D.C.: 2001.
9. Davis RE, Jacklin R, Sevdalis N, Vincent CA. Patient involvement in patient safety: what factors influence patient participation and engagement? *Health Expectations*. Sep; 2007 10(3):259–67. [PubMed: 17678514]
10. Moulton B, King JS. Aligning ethics with medical decision-making: the quest for informed patient choice. *The Journal of Law, Medicine & Ethics*. Jan; 2010 38(1):85–97.
11. Anthony D, Herndon B, Gallagher P, Barnato A, Bynum J, Gottlieb D, et al. How much do patients' preferences contribute to resource use? *Health Affairs*. 2009; 28(3):864–873. [PubMed: 19414899]
12. Barnato AE, Herndon MB, Anthony DL, Gallagher PM, Skinner JS, Bynum JPW. Are Regional Variations in End-of-Life Care Intensity Explained by Patient Preferences? A Study of the US Medicare Population. *Medical Care*. 2007; 45(5):386–393. [PubMed: 17446824]
13. Groves, R.; Fowler, F.; Couper, M.; Lepkowski, J.; Singer, E.; Tourangeau, R. *Survey Methodology*. John Wiley & Sons; Hoboken, NJ: 2004.
14. Reynolds TJ, Jolly JP. Measuring personal values: an evaluation of alternative methods. *Journal of Marketing Research*. 1980; 17(4):531–536.
15. Thurstone LL. A law of comparative judgment. *Psychological Review*. 1927; 34(4):273–286.
16. Hadorn DC, Hays RD, Uebbersax J, Hauber T. Improving task comprehension in the measurement of health state preferences. A trial of informational cartoon figures and a paired-comparison task. *Journal of Clinical Epidemiology*. Mar; 1992 45(3):233–43. [PubMed: 1569420]
17. Crump T, Llewellyn-Thomas HA. Assessing Medicare beneficiaries' strength-of-preference scores for health care options: how engaging does the elicitation technique need to be? *Health Expectations*. 2011; 14(S1):33–45. [PubMed: 21323819]
18. Fowler FJ, Gallagher PM, Anthony DL, Larsen K, Skinner JS. Relationship between regional per capita Medicare expenditures and patient perceptions of quality of care. *JAMA*. May; 2008 299(20):2406–12. [PubMed: 18505950]
19. Llewellyn-Thomas HA, Arshinoff R, Bell M. In the Queue for total joint replacement: patients' perspectives on waiting times. *Journal of Evaluative Clinical Practice*. 1998; 4(1):63–74.
20. Llewellyn-Thomas HA, Thiel E, Paterson JM, Naylor CA. In the queue for coronary artery bypass grafting: patients' perceptions of risk and "maximal acceptable waiting time". *Journal of Health Services Research Policy*. 1999; 4(2):65–72. [PubMed: 10387409]
21. O'Connor AM, Jacobsen MJ, Stacey D. An evidence-based approach to managing women's decisional conflict. *Journal of Obstetric, Gynecologic, & Neonatal Nursing*. 2002; 31(5):570–581.
22. Medpac. *A Data Book: healthcare spending and the Medicare program*. Washington, D.C.: 2008.

23. Wennberg JE, O'Connor AM, Collins ED, Weinstein JN. Extending the P4P agenda, part 1: how Medicare can improve patient decision making and reduce unnecessary care. *Health Affairs*. 2007; 26:1564–1574. [PubMed: 17978377]
24. O'Connor AM, Wennberg JE, Legare F, Llewellyn-Thomas HA, Moulton BW, Sepucha KR, et al. Toward the “tipping point”: decision aids and informed patient choice. *Health Affairs*. 2007; 26(3):716–25. [PubMed: 17485749]
25. Frosch D, Moulton B, Wexler R, Holmes-Rovner M, Volk R, Levin C. Shared decision making in the United States: policy and implementation activity on multiple fronts. *Zeitschrift für Evidenz, Fortbildung und Qualität im Gesundheitswesen*. 2011; 105(4):305–312.
26. Legare F, Stacey D, Forest P-G, Coutu M-C. Moving SDM forward in Canada: milestones, public involvement, and barriers that remain. *Zeitschrift für Evidenz, Fortbildung und Qualität im Gesundheitswesen*. 2011; 105(4):245–253.
27. Coulter A, Edwards A, Elwyn G, Thomson R. Implementing shared decision making in the UK. *Zeitschrift für Evidenz, Fortbildung und Qualität im Gesundheitswesen*. 2011; 105(4):300–304.
28. Harter M, Muller H, Dirmaier J, Donner-Barizhoff, Bieber C, Elch W. Patient participation and shared decision making in Germany - history, agents and current transfer to practice. *Zeitschrift für Evidenz, Fortbildung und Qualität im Gesundheitswesen*. 2011; 105(4):263–270.
29. Dolan JG. Shared decision-making - transferring research into practice: the Analytic Hierarchy Process (AHP). *Patient Education and Counseling*. Dec; 2008 73(3):418–25. [PubMed: 18760559]
30. Ryan M, Farrar S. Using conjoint analysis to elicit preferences for health care. *British Medical Journal*. 2000; 320:1530–1533. [PubMed: 10834905]
31. Gold, M.; Seigel, J.; Russell, L.; Weinstein, M. *Cost-Effectiveness in Health and Medicine*. Oxford University Press; New York, NY: 1996.

WHAT IS NEW?

- Using paired comparisons in conjunction with linear scales to elicit individuals' preferences for different health care options provides a more detailed picture of the distribution of a population's preferences than would be obtained by using a categorical measurement technique.
- Access to detailed pictures of the distribution of a population's preferences could help health services researchers to identify unwarranted variations in preference-sensitive care, and, where such variations are identified, to pinpoint population sub-groups that might benefit from targeted interventions such as patients' decision support programs.
- Thus, health services researchers should consider using paired comparisons in conjunction with linear scales in their future surveys of community-wide preferences for health care options in preference-sensitive clinical situations.

Figure 2 a–c.
Three Scenarios About Seeking Care: Favored Options and Raw Leaning Scale Scores

Figure 3 a–e.
Five Scenarios About Care at the End of Life: Favored Options and Raw Leaning Scale Scores

Figure 4.
Converted Strength-of-Preference Scores for the Most-Favored Option in Each Scenario:
Box-and-Whisker Plots*

*These box-and-whisker plots have been constructed using the high and low ends of the range to construct the “whiskers” and the first and third quartiles to construct the “box”. The median score is noted with a vertical line through the box. Where the whisker or median score is not depicted, it is because it is the same value as the third quartile.

Table 1

The Eight Hypothetical Clinical Scenarios Used in the Study

SEEKING MEDICAL ATTENTION			
Scenario #1: Regular Care from General Doctor versus Multiple Specialists			
Stimulus Question	Most of the time, would you prefer to have one general doctor who manages most of your medical problems, or would you prefer to have each medical problem cared for by a different specialist?		
Choice Set	General Doctor		Multiple Specialists

Scenario #2: Sooner versus Later Care for Cough After Flu			
Stimulus Question	Would you prefer to go to see your doctor right away if you had a severe cough 2-days after the flu was over, prefer to wait for a week and then go to see your doctor if you still had the severe cough, or prefer to wait longer than a week to see if the cough went away?		
Choice Set	Wait longer than a week	Wait a week	Right away

Scenario #3: Sooner versus Later Care for Chest Pain After Stair-Climbing			
Stimulus Question	Would you prefer to go to see your doctor right away, prefer to wait a week and then go to see your doctor if you still had the chest pain, or prefer to wait longer than a week to see if the chest pain went away?		
Choice Set	Wait longer than a week	Wait a week	Right away

CARE AT THE END OF LIFE			
Scenario #4: Site of Care			
Stimulus Question	Suppose that you had a very serious illness. Imagine that no one knew exactly how long you would live, but your doctors said you almost certainly would live less than 1 year. If that illness started to get worse, where would you like to spend your last days?		
Choice Set	Own home	Nursing home	Hospital

Scenario #5: Life-Extending Drugs versus No Drugs			
Stimulus Question	Suppose that you had a very serious illness. Imagine that no one knew exactly how long you would live, but your doctors said you almost certainly would live less than 1 year. To deal with that illness, do you think you would want drugs that might lengthen your life beyond 1 year – for about 30 additional days – but would make you feel worse?		
Choice Set	No Drugs		Drugs

Scenario #6: Quality-of-Life Enhancing Drugs versus No Drugs			
Stimulus Question	Suppose that you had a very serious illness. Imagine that no one knew exactly how long you would live, but your doctors said you almost certainly would live less than 1 year. If that illness got to a point that you were feeling bad all the time, do you think you would want drugs that would make you feel better, but might shorten your life by a month?		
Choice Set	No Drugs		Drugs

Scenario #7: Respirator with 1-Month Life Extension versus No Respirator			
Stimulus Question	Suppose a year ago you were diagnosed with a very serious illness. Imagine that your doctors had said you almost certainly would live less than a year. Suppose the year has passed and the illness has got to the point that you needed a respirator to stay alive. If it would lengthen your life for a month, would you want to be put on a respirator?		
Choice Set	No Respirator		Respirator

Scenario #8: Respirator with 1-Week Life Extension versus No Respirator		
Stimulus Question	Suppose a year ago you were diagnosed with a very serious illness. Imagine that your doctors had said you almost certainly would live less than a year. Suppose the year has passed and the illness has got to the point that you needed a respirator to stay alive. If it would lengthen your life for a week, would you want to be put on a respirator?	
Choice Set	No Respirator	Respirator

Table 2

Study Sample's Demographic Characteristics and Self-Assessed Health

Characteristic		N(%)
Gender	Male	92 (45.5)
	Female	110 (54.5)
Age	65–69	39 (19.3)
	70–79	111 (55.0)
	80+	52 (25.7)
Race	White	186 (93.5)
	Black	7 (3.5)
	Other	6 (3.0)
Language	English	176 (87.1)
	Spanish	26 (12.9)
Education	8th grade or less	14 (6.9)
	Some high school	18 (8.9)
	High school grad	46 (22.7)
	Some college	56 (27.7)
	College grad	33 (16.3)
	More than college	33 (16.3)
Marital Status	Single/Widow	77 (38.1)
	Married	135 (61.9)
Self-Assessed Health	Poor	4 (2)
	Fair	46 (22.9)
	Good	20 (34.8)
	Very good	63 (31.3)
	Excellent	18 (9.0)
Self-Assessed Mental Health	Poor	1 (0.5)
	Fair	19 (9.4)
	Good	58 (28.7)
	Very good	77 (38.1)
	Excellent	47 (23.3)