Perceived Efficacy in Patient-Physician Interactions (PEPPI): Validation of an Instrument in Older Persons

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OBJECTIVE: To develop and validate a brief instrument—the Perceived Efficacy in Patient-Physician Interactions Questionnaire (PEPPI)—to measure older patients’ self-efficacy in obtaining medical information and attention to their medical concerns from physicians.

DESIGN: Two consecutive validation surveys.

SETTING: Eleven senior multipurpose centers in Los Angeles County California.

POPULATION: A convenience sample of 163 community-dwelling older persons (Survey 1: n = 59, mean age = 77.1 years, 76.3% female; Survey 2: n = 104, mean age = 77.4 years, 57.7% female).

MEASURES: The 10-item PEPPI, subscales of the Patient Satisfaction Questionnaire, the Medical Outcomes Study (MOS) Coping Scale, the Mastery Scale, and global self-reported health and restricted activity days items.

RESULTS: The full 10-item and a 5-item short form of PEPPI demonstrated Cronbach’s alphas of 0.91 and 0.83, respectively. PEPPI demonstrated discriminant and convergent validity as hypothesized, correlating negatively with avoidant coping (r = -0.27, P<.001) and positively with active coping (r = 0.17, P = 0.03) and with patient satisfaction with physician interpersonal manner (r = 0.49, P < .0001) and communication (r = 0.51, P < .0001) (values from the overall sample). Further, in the second survey, PEPPI correlated positively with self-reported health (r = 0.42, P < .0001), education (r = 0.24, P = 0.01) and self-mastery (r = 0.29, P = 0.01) and negatively with restricted activity days (r = -0.25, P = 0.01). PEPPI-5 demonstrated correlations similar in magnitude, direction, and statistical significance.

CONCLUSION: In either the 5- or 10-item version, PEPPI is a valid and reliable measure of older patients’ perceived self-efficacy in interacting with physicians. This instrument may be useful in measuring the impact of empowerment interventions to increase older patients’ personal sense of effectiveness in obtaining needed health care. J Am Geriatr Soc 46:889-894, 1998.

The patient-physician interaction is central to the process of health care. Effective patient-physician communication has been shown to be associated with a broad range of improved outcomes of care, including health and functional status, physiologic outcomes, patient satisfaction, and patient adherence to medical care recommendations.1–7 However, many of the changes resulting from the growing trend toward cost containment in the US emphasize greater physician productivity with less attention to the patient-physician relationship.8,9 Moreover, contractual arrangements of physicians with third party payers may present a hazard to the traditional role of physicians as advocates for patients’ best interests.8,9 As a result, greater patient self-advocacy may be necessary to optimize health care.

Sociocultural factors specific to older persons may affect their interactions with physicians adversely. Physicians have been shown to spend less time with their older patients than with younger patients.10,11 Both physicians and older patients may be susceptible to the ageist attitude12 that a patient is simply “too old” to tolerate or benefit from appropriate but more aggressive medical intervention.13,14 Furthermore, older patients are less likely than younger patients to challenge authority figures such as physicians,15 less likely to ask questions,16 less inclined to take a participatory or controlling role in the healthcare process,15,17–19 and are less effective in getting their physicians to attend to their health concerns than younger patients.20 These attributes, specific to the interactions of older patients with healthcare providers, may result in suboptimal care4,12 and potentially poorer medical outcomes.

Self-efficacy, the belief that one can successfully take appropriate and meaningful action,23–25 has been shown to mediate health outcomes.26–28 Personal actions, such as exerting more control over their health care, have been shown to result in better health outcomes and reduced mortality in older persons.29–31 Interventions to increase older patients’ self-efficacy and sense of control during the patient-physician encounter could have a positive influence on health and functioning. Such interventions may also result in changes in...
physician practice behavior in caring for older patients.\textsuperscript{32,33} Although measures of patient perceptions of their involvement behaviors during the physician encounter are available,\textsuperscript{34,35} we are unaware of any validated, published instruments to measure specifically patient self-efficacy in interacting with physicians.

We developed a self-report questionnaire to measure older patients' perceived self-efficacy in patient-physician interactions, specifically with regard to obtaining needed information about and attention to their chief medical concerns. We report on the validity and reliability of this instrument, the Perceived Efficacy in Patient-Physician Interactions Questionnaire (PEPPI).

**METHODS**

**Instrument Development**

The Perceived Efficacy in Patient-Physician Interactions Questionnaire was designed to assess the subjective sense of patients' confidence when interacting with their physicians. The main transactions between patient and physician during the patient-physician encounter include eliciting, giving, and receiving information by both parties, as well as physician-initiated action such as advice-giving and implementation (either ordering or performing) of diagnostic tests or medical treatment. Ten questions were developed to measure patients' confidence in their ability to elicit and understand information from and communicate information to their physicians, as well as confidence in their ability to get their physicians to address and act on their main medical concerns. The items were based on issues that older patients raised about their interactions with physicians in open-ended questioning in a study of adherence with geriatric assessment recommendations\textsuperscript{36} and on the authors' observation of, or personal participation in, patient-physician encounters as physicians and/or patients. The content of the PEPPI items is displayed in Table 1. Each item begins with "How confident are you in your ability to...", and subjects responded to each question on a scale of 1 to 5, with 5 representing "very confident," and 1 representing "not at all confident." The range of possible scores for the full PEPPI scale was 10 to 50 (50 representing highest patient-perceived self-efficacy). The full 10-item PEPPI takes approximately 3 minutes to be administered, and subjects seemed to have little or no difficulty understanding the questions.

A five-item version of PEPPI was derived from the 10-item version, using those items demonstrating the most variability while maintaining the greatest possible internal consistency reliability and construct validity. The range of possible scores for the five-item version of the PEPPI scale (PEPPI-5) was 5 to 25 (25 = highest patient self-efficacy). The items contained in PEPPI-5 are also noted in Table 1.

**Sample and Data Collection**

Two consecutive surveys were conducted to test the validity and reliability of PEPPI. The first study surveyed a convenience sample of 59 subjects aged 65 years and older at three senior multipurpose center sites (federal or state supported centers housing multiple services for older people, including meal sites, social services, recreational activities, and, in some cases, health clinics) in the city of Los Angeles, California. Based on the results of the first survey, a new questionnaire was designed, deleting some measures and adding others to assess better the construct validity of the

| Table 1. Items with Means (m) and Standard Deviations (SD) for the PEPPI Questionnaire* |
|----------------------------------------|---------------------|---------------------|
| Item | Study 1 (n = 59) | Study 2 (n = 104) |
|      | m (SD)           | m (SD)             |
| Q1.  | How confident are you in your ability to get a doctor to pay attention to what you have to say? | 3.90 (1.16) | 3.89 (1.19) |
| **Q2.** | How confident are you in your ability to know what questions to ask a doctor? | 3.83 (1.13) | 3.77 (1.15) |
| **Q3.** | How confident are you in your ability to get a doctor to answer all of your questions? | 3.87 (1.09) | 3.54 (1.18) |
| Q4.  | How confident are you in your ability to ask a doctor questions about your chief health concern? | 4.27 (1.03) | 3.97 (1.14) |
| **Q5.** | How confident are you in your ability to make the most of your visit with a doctor? | 3.79 (1.14) | 3.83 (1.12) |
| **Q6.** | How confident are you in your ability to get a doctor to take your chief health concern seriously? | 3.78 (1.15) | 3.85 (1.16) |
| Q7.  | How confident are you in your ability to understand what a doctor tells you? | 3.86 (1.14) | 3.99 (1.16) |
| **Q8.** | How confident are you in your ability to understand what a doctor tells you? | 3.66 (1.27) | 3.73 (1.24) |
| Q9.  | How confident are you in your ability to explain your chief health concern to a doctor? | 4.04 (1.04) | 3.96 (0.99) |
| Q10. | How confident are you in your ability to ask a doctor for more information if you don't understand what he or she said? | 4.03 (1.05) | 4.10 (1.06) |

*Range = 1 (least) to 5 (most) for all items.

**5-item scale.**
PEPPI scale; the PEPPI items themselves remained the same in both studies. This second questionnaire was utilized in another convenience sample of 104 older subjects at 11 senior multipurpose center sites spread over a large portion of Los Angeles County. Questionnaires were interviewer-administered in both studies and utilized visual as well as verbal prompts for the question response sets. All subjects could understand and speak English.

Other Measures

The surveys employed several previously validated instruments to assess the construct validity of PEPPI. The questionnaire for both Surveys 1 and 2 contained the Medical Outcomes Study (MOS) Coping Scale, which included 11 items adapted for the MOS from Billings and Moos to measure ways patients cope with physical or emotional health problems. Modes of coping measured by this battery were: active coping (e.g., becoming more informed about one’s problem; making a plan of action and following it), and avoidance coping (e.g., making oneself feel better by eating, drinking, smoking; deciding to spend more time alone).

Patient satisfaction was measured in both samples using the Patient Satisfaction Questionnaire (PSQ). Survey 1 and Survey 2 contained the five-item “satisfaction with communication” and the seven-item “satisfaction with interpersonal manner of care” subscales from the PSQ. Survey 1 contained the two-item “satisfaction with time spent with the physician” subscale and six-item “general satisfaction with health care” subscale. The latter two subscales were dropped in Survey 2 and were replaced by the eight-item “satisfaction with financial aspects of care” PSQ subscale and four items from the PSQ “satisfaction with access to care” subscale.

As a general measure of patient self-efficacy with regard to health, the Survey 1 questionnaire contained the previously validated four-item Health-Related Self-Mastery Scale (HRSM). This index assesses patients’ perceived capacity to actually obtain desired health outcomes (e.g., “If I become sick, I have the power to make myself well again”). This instrument was replaced in Survey 2 by a more global measure of self-efficacy that was not specific to health, Pearlin’s validated seven-item Self-Mastery Scale (SMS) (e.g., “I have little control over the things that happen to me; I can do just about anything I really set my mind to do, etc.”).

As a measure of self-reported health, an item adapted from the National Health Interview Survey (NHIS) asking about the number of bed days the subject experienced in the previous month as a result of illness or injury was incorporated in Survey 1. Because of a lack of variability in the responses to this item, this was substituted for in Survey 2 by a two-item measure of restricted activity days in the past month, also adapted from the NHIS (i.e., the subject was first asked whether s/he had cut down on the things they usually do, then, if yes, by how many days). In addition, in Survey 2, self-reported health status was measured by one item from the Medical Outcomes Study Short Form-36 (i.e., “In general, would you say your health is (1) excellent... (5) poor?”).

Hypotheses

With regard to the construct validity of PEPPI, we hypothesized that certain characteristics of older persons, such as active coping with health problems, general self-efficacy, satisfaction with interpersonal and communication aspects of medical care, and health and educational status would be associated positively with PEPPI. Conversely, we expected that avoidant coping with health problems would be associated negatively with PEPPI. In addition, we hypothesized that patient satisfaction with components of medical care related less directly to the patient-physician interaction (i.e., financial aspects and access) would be less associated with PEPPI than satisfaction with clearly related aspects (i.e., interpersonal and communication).

Statistical Analysis

Mean scores and standard deviations for each PEPPI item and internal consistency reliability coefficients (Cronbach’s alpha) for both the 10-item and the five-item versions of PEPPI were calculated. Pearson product moment correlation coefficients were calculated for associations between continuous variables, and point biserial correlation coefficients were calculated for associations between continuous and dichotomous variables. Spearman rank-order correlation coefficients were calculated for associations between ordinal variables or variables with non-normal distributions. Factor analysis of the 10-item PEPPI was performed using principal components analysis with varimax rotation. All calculations were performed using the STATA statistical package, version 4.0 (College Station, TX).

RESULTS

In general, sociodemographic differences between the two samples were that Survey 1 had significantly more women, more black subjects, and significantly fewer college graduates than Survey 2. More specifically, the mean age of the study sample was 77.1 (range 65–91) and 77.4 (range 61–93) years in Survey 1 and 2, respectively (P = .59 for the difference between the two samples). Seventy-six percent of the subjects in Survey 1 were women, whereas 57.7% in Survey 2 were women (P = .02). The ethnic breakdown for Survey 1 and Survey 2 was 76.3% and 75% white, 15.3% and 8.7% black, zero percent and 3.9% Hispanic, 8.5% and 10.6% Asian/Pacific Islander, and zero percent and 1.9% other, respectively (P = .86). Approximately half of subjects in both samples were widowed (48.3% and 51% for Survey 1 and 2, respectively, P = .74). Twenty-four percent of both samples had completed only elementary school; 41.4% and 26.0% had completed high school, 25.9% and 26.0% had some college education, and 8.6% and 24.0% had completed college or higher, in Surveys 1 and 2, respectively (P = .02).

The mean scores and standard deviations for each PEPPI item in each survey are displayed in Table 1; actual range of scores were one to five for each of the 10 items. Internal reliability coefficients (Cronbach’s alpha) for the full 10-item PEPPI Questionnaire were 0.90 and 0.91, and for the five-item short form, 0.82 and 0.83, for Study 1 and Study 2, respectively. Factor analysis of the 10-item PEPPI using principal components analysis with varimax rotation confirmed the presence of one distinct domain (i.e., only one factor was retained with eigenvalue greater than 1.00; factor loadings for each of the 10 items, Q1 through Q10, were: 0.70, 0.57, 0.94, 0.78, 0.75, 0.78, 0.68, 0.77, 0.78, and 0.78, respectively).

The PEPPI Questionnaire demonstrated convergent and discriminant construct validity that, for the most part, supported our hypotheses (see Tables 2 and 3). PEPPI correlated
negatively with avoidant coping style (which was statistically significant in both studies) and correlated positively with active coping style (significant in Survey 1); overall correlations for PEPPPI with avoidant and active coping in both surveys combined were: \( r = -0.27 \), \( P = .001 \), and \( r = .17 \), \( P = .03 \), respectively. PEPPPI also exhibited significant positive correlations with the "interpersonal," "communication," "general satisfaction," and "time spent" subscales of the PSQ, whereas the magnitude of association with the "financial" and "access" subscales was considerably less (see Table 2). In the combined data set of both surveys, the correlations \( (r) \) between PEPPPI and the PSQ "interpersonal" and "communication" subscales were 0.49 \( (P < .0001) \) and 0.51 \( (P < .0001) \), respectively. PEPPPI appeared to have no association with Health-Related Self-Mastery, but it did correlate significantly with the general self-efficacy measure (Pearlin's Self-Mastery Scale) (Table 2).

There were some differences between the two studies in the association of PEPPPI with sociodemographic and health characteristics (see Table 3). In Survey 1, PEPPPI was correlated negatively with female gender, whereas in Survey 2 there appeared to be no relationship with gender. In Survey 2, PEPPPI was associated positively with higher level of education and marital status (widowhood), with neither association apparent in Survey 1. Global health and restricted activity days were associated with PEPPPI positively and negatively, \( P < .001 \), respectively. PEPPPI also exhibited significant positive correlation with widowhood in Survey 2. In the combined data set of both surveys, the correlations \( (r) \) between PEPPPI and the PSQ "interpersonal" and "communication" subscales were 0.49 \( (P < .0001) \) and 0.51 \( (P < .0001) \), respectively. PEPPPI appeared to have no association with Health-Related Self-Mastery, but it did correlate significantly with the general self-efficacy measure (Pearlin's Self-Mastery Scale) (Table 2).

The five-item PEPPPI (PEPPPI-5) demonstrated essentially the same relationships with attitudinal scales, sociodemographic characteristics, and health measures as the full 10-item scale, both in magnitude and statistical significance (see Tables 2 and 3).

**DISCUSSION**

Our purpose was to develop a reliable and valid measure of older patients' perceived self-efficacy in obtaining needed information about and attention to their chief medical concerns during interactions with physicians. PEPPPI, in both the five- and 10-item versions, demonstrated high reliability in this study. Moreover, the pattern of relationships between PEPPPI and other constructs of interest attests to the construct validity\(^4^8\) of PEPPPI, both convergent and discriminatory.\(^4^9\)

As hypothesized, those patients with higher education, those more likely to cope actively with health problems than avoidantly, those more satisfied with interpersonal and communication aspects of medical care, and those reporting better health status and fewer restricted activity days reported greater confidence in interacting with physicians. Conversely, patients more likely to cope avoidantly with health problems reported much less self-efficacy in dealing with physicians. In addition, PEPPPI, as predicted, was more highly associated with satisfaction with related aspects of health care, i.e., interpersonal relations and communication with physicians, than with satisfaction with relatively unrelated aspects of health care, i.e., financial and access issues.

Although the direction of the association of PEPPPI with other constructs was, largely, as hypothesized, the magnitude of the association with patient satisfaction overall was greater than expected. It is unclear whether PEPPPI also measures satisfaction, to some extent, or whether patients who feel more in control in their relationships with physicians are more satisfied with their health care. Further study is needed to elucidate this distinction. Nonetheless, patient satisfaction in older persons has been shown to be associated significantly with adherence to medical care in older persons.\(^5^0\) If PEPPPI measures something distinct from patient satisfaction, which, in turn, results in greater patient satisfaction, then intervening on behalf of patient self-efficacy could serve as another avenue for increasing patient adherence and improving health outcomes.

Female gender seemed to be associated negatively with self-efficacy in patient-physician interactions. Sociocultural expectations of men to behave more assertively than women,\(^5^1\) especially in this age cohort, may have played a role in this phenomenon; older women have reported less self-efficacy than older men in some studies.\(^5^2,5^3\) Of note was the positive association of PEPPPI with widowhood in Survey 2, though widowhood was not significantly associated with gender in this study. Widowed adults, including older adults, have reported greater self-efficacy than married adults.\(^5^2\) It is

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**Table 2. Correlations Between PEPPPI Scale (10- and 5-item) and Other Attitudinal Scales\(^*\)**

<table>
<thead>
<tr>
<th></th>
<th>Study 1 (n = 59)</th>
<th>Study 2 (n = 104)</th>
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<tbody>
<tr>
<td></td>
<td>PEPPPI-10</td>
<td>PEPPPI-5</td>
</tr>
<tr>
<td>Active Coping</td>
<td>0.34*</td>
<td>0.30*</td>
</tr>
<tr>
<td>Avoidant Coping</td>
<td>-0.25*</td>
<td>-0.29*</td>
</tr>
<tr>
<td>Patient satisfaction</td>
<td></td>
<td></td>
</tr>
<tr>
<td>scales</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interpersonal</td>
<td>0.51*</td>
<td>0.52*</td>
</tr>
<tr>
<td>Communication</td>
<td>0.60*</td>
<td>0.55*</td>
</tr>
<tr>
<td>Access</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>Financial</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>General satisfaction</td>
<td>0.48*</td>
<td>0.53*</td>
</tr>
<tr>
<td>Time spent</td>
<td>0.55*</td>
<td>0.60*</td>
</tr>
<tr>
<td>Health-Related Self-Mastery</td>
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<td>0.06</td>
</tr>
<tr>
<td>Self-Mastery Scale</td>
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<td>N/A</td>
</tr>
</tbody>
</table>

\(^*\)Correlation coefficients are Pearson product moment correlations for continuous with continuous variables, point-biserial correlations for continuous with dichotomous variables, and Spearman rank-order correlations for ordinal variables or variables with skewed distributions.

For each scale, the direction of scoring is consistent with the scale's name, e.g., higher access scores indicate greater access to medical care.

\(^*\)P ≤ .05.
Table 3. Correlations Between PEPPI Scale (10- and 5-item) and Sociodemographic and Health Measures

<table>
<thead>
<tr>
<th></th>
<th>Study 1 (n = 59)</th>
<th>Study 2 (n = 104)</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>PEPPI-10</td>
<td>PEPPI-5</td>
</tr>
<tr>
<td>Demographic measures</td>
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<td></td>
</tr>
<tr>
<td>Age</td>
<td>-0.18</td>
<td>-0.19</td>
</tr>
<tr>
<td>Gender (female/male)</td>
<td>-0.25*</td>
<td>-0.29*</td>
</tr>
<tr>
<td>Ethnicity (non-white/other)</td>
<td>0.19</td>
<td>0.18</td>
</tr>
<tr>
<td>Education (some college or more/high school or less)</td>
<td>0.19</td>
<td>0.13</td>
</tr>
<tr>
<td>Marital status (widowed/other)</td>
<td>-0.03</td>
<td>-0.05</td>
</tr>
<tr>
<td>Living status (alone/not alone)</td>
<td>-0.17</td>
<td>0.19</td>
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<tr>
<td>Health measures</td>
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<tr>
<td>Restricted activity days</td>
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<td>N/A</td>
</tr>
<tr>
<td>Disability days</td>
<td>-0.17</td>
<td>-0.16</td>
</tr>
</tbody>
</table>

1Correlation coefficients are Pearson product moment correlations of continuous with continuous variables, point-biserial correlations for continuous with dichotomous variables, and Spearman rank-order correlations for ordinal variables or variables with skewed distributions.

For each scale, the direction of scoring is consistent with the scale's name, e.g., higher global health scores indicate better health.

*
P ≤ .05.

plausible that being forced to deal with problems on one's own increases a person's confidence in interacting with others to obtain what is needed, including interacting with physicians. Similarly, more highly educated subjects reported greater confidence in interacting with physicians, conceivably because of better communication skills resulting from higher education. Of note is that the wording of the PEPPI items focuses on patients' own sense of self-confidence in interacting with physicians in general and is neither physician- nor encounter-specific; therefore, it can only be considered to be a measure of general tendency.

In conclusion, the PEPPI Questionnaire appears to be a valid and reliable measure of patient self-efficacy in interacting with physicians. This instrument could serve as a valuable research tool to measure the impact of interventions aimed at influencing outcomes of care by empowering older patients in their relationships with physicians. PEPPI could also serve as a measure of the degree to which systemic changes in healthcare delivery empower or disempower older patients in eliciting needed medical attention to their chief health concerns.

ACKNOWLEDGMENTS

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REFERENCES


