Improving the Validity and Reliability of a Health Promotion Survey for Physical Therapists

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ABSTRACT

Purpose: Physical therapists (PTs) have a unique opportunity to intervene in the area of health promotion. However, no instrument has been validated to measure PTs' views on health promotion in physical therapy practice. The purpose of this study was to evaluate the content validity and test-retest reliability of a health promotion survey designed for PTs. **Methods:** An expert panel of PTs assessed the content validity of "The Role of Health Promotion in Physical Therapy Survey" and provided suggestions for revision. Item content validity was assessed using the content validity ratio (CVR) as well as the modified kappa statistic. Therapists then participated in the test-retest reliability assessment of the revised health promotion survey, which was assessed using a weighted kappa statistic. **Results:** Based on feedback from the expert panelists, significant revisions were made to the original survey. The expert panel reached at least a majority consensus agreement for all items in the revised survey and the survey-CVR improved from 0.44 to 0.66. Only one item on the revised survey had substantial test-retest agreement, with 55% of the items having moderate agreement and 43% poor agreement. **Conclusions:** All items on the revised health promotion survey demonstrated at least fair validity, but few items had reasonable test-retest reliability. Further modifications should be made to strengthen the validity and improve the reliability of this survey.

Key Words: health promotion, physical therapy, validity, reliability

INTRODUCTION AND PURPOSE

Chronic diseases and unhealthy lifestyles plague millions of Americans. According to the National Center for Chronic Disease Prevention and Health Promotion,¹ unhealthy lifestyle choices have increased the nation's health care costs and the prevalence of disabilities associated with chronic diseases. Poor lifestyle choices such as poor diet, physical inactivity, substance abuse, and other behaviors contribute to chronic diseases. Strong evidence exists that positive lifestyle changes promote healthy living and decrease premature death.¹ Health professionals should therefore rely on the promotion of healthy behaviors to help individuals improve their health.

Health professionals have the potential capability to promote health and wellness in patients and the public.^{2,3} Health professionals are encouraged to take an active role in health promotion as endorsed by Healthy People 2020,⁴ a national strategy aimed at reducing the incidence of disease and to improving the quality of life for the nation by setting goals for changing unhealthy behaviors. Healthy People 2020 proposes a set of specific health objectives that encourages health professionals to incorporate health promotion into their practices, including mental health, nutrition and weight status, physical activity, and tobacco use.⁴

Studies suggest that physical therapists (PTs) may be able to enhance their roles in health promotion with their patients/clients.⁵⁻⁷ However, little research has been done to assess PTs' competence and confidence in the provision of health promotion interventions. Given that PTs spend significant one-on-one time with many individuals who are living with or are at risk for chronic diseases and conditions that could be improved by lifestyle changes, PTs have the opportunity to discuss and counsel patients/clients on healthy behaviors and can help affect lifestyle changes.^{8,9}

The development and use of a valid and reliable tool to measure PT practice and attitudes toward health promotion is critical to further research in the area of health

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promotion in PT practice. “The Role of Health Promotion in Physical Therapy Survey” was developed by Rea et al⁷ to ascertain PTs’ health promotion practices and their confidence in performing health promotion in the areas of (1) psychological well-being, (2) nutrition and overweight issues, (3) physical activity, and (4) smoking cessation. However, the validity and reliability of this survey has not yet been established. Therefore, the primary purpose of this study was to assess the content validity of “The Role of Health Promotion in Physical Therapy Survey;” a secondary purpose was to assess the survey’s reliability.

METHODS AND RESULTS

The Institutional Review Board of the University of Alabama at Birmingham (UAB) approved this study. The corresponding author of “The Role of Health Promotion in Physical Therapy survey”⁷ gave permission to use the survey. To address the goals of our study, there were two phases (content validity and test-retest reliability), each with multiple steps (Figure).

PHASE I: CONTENT VALIDITY

Step 1: Selection of Expert Reviewers

Methods

A panel of experts was recruited to determine if the content of the survey adequately sampled the domain of physical therapy health promotion practice in the 4 topic areas used by Rea et al.^{7,10} Faculty from the UAB identified PTs considered experts in the area of health promotion. Expert panel members were contacted through e-mail. These selected individuals assisted in identifying other individuals considered experts in the field of health promotion and disease prevention. After the initial e-mail, additional recruitment messages were sent to program directors at selected PT educational programs with a request that it be forwarded to individuals who have a background in health promotion. E-mail addresses for PT program directors in southeastern states (Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, Tennessee, North Carolina, and South Carolina) were obtained through the American Physical Therapy Association (APTA) Web site. The qualifications for the expert panel were that the panelist was a PT with expertise in health promotion. Initially, the potential expert panelists were identified as such by a peer, then they also self-identified as having expertise in health promotion, and lastly, we reviewed their credentials for evidence of expertise in health promotion (eg, coauthor of a book chapter on health promotion, graduate degree in health promotion, or director of a health and wellness facility).

Results

Ten PTs considered experts in the area of health promotion and 198 program directors were contacted by e-mail; it was impossible to determine how many recruitment messages were forwarded. Of those that received the e-mail, 11 were willing to serve as an expert panelist during round 1 and 9 of those for round 2. Table 1 describes the background of

Table 1. Demographics for the 9 Expert Panelists in Phase 1, Round 2

Demographic Characteristics	
Age (years), X (range)	49 (38–68)
Female, n	6
Caucasian, n	9
Years practicing PT, n	
11–15	2
16–20	2
21–30	2
≥ 31	3
Highest degree earned, n	
Masters	1
PhD (or equivalent)	7
tDPT (transitional)	1
Qualifications in health promotion, n	
Authored health promotion content	2
Teaching health promotion	3
Developing health promotion programs	3

the 9 expert panel members (demographic data was not collected until round 2).

Step 2: Expert Review – Round 1

Methods

For the first round of expert panel evaluation, 11 panelists used Question Pro¹¹ to access the survey and rated each item using a 3-point scale (1 = not necessary, 2 = useful but not essential, or 3 = essential). Each section of the survey (ie, I.A. Physical Therapist Characteristics, I.B. Health Promotion Patterns, II.A. Self-Efficacy, and II.B. Outcome Expectations) also consisted of the following open-ended questions: “Is the section easy and clear to understand? Consider the terminology. What changes would you make to the section?”

In addition to reviewing the comments from the open-ended questions, the content-validity ratio (CVR) was calculated for each survey item based on the formula from Lawshe¹²:

$$\text{CVR} = \frac{n_e - N/2}{N/2}$$

where n_e is the number of panelists rating an item as “essential,” and N is the total number of panelists. If all panelists agreed an item was essential, then the CVR is 1, if 50% agree, then CVR = 0 and if none agree, then CVR = -1. Statistically significant agreement using the CVR was based on the critical values of Wilson et al.¹³

Results

The item-CVR ranged from -0.64 to 1.00, resulting in a survey-CVR (average of individual item-CVR values) of 0.44 (Table 2). There was unanimous agreement (CVR = 1) on only 8 items, statistically significant agreement on 45% of items, and 16 items had a CVR ≤ 0 (Table 2). Taking into consideration the CVR values and open-ended comments from the expert panel, the survey was

Table 2. Phase I: Round 1 – Content Validity for Original Survey

Item #	Panelists rating item as "Essential"	Number of panelists responding	CVR*	i-CVI†	Kappa‡
1	7	11	0.27	0.64	0.57
2	7	11	0.27	0.64	0.57
3	9	11	0.64	0.82	0.81
4	3	11	-0.45	0.27	0.21
5	8	11	0.45	0.73	0.70
6	2	11	-0.64	0.18	0.16
7	7	11	0.27	0.64	0.57
8	6	11	0.09	0.55	0.41
9	10	11	0.82	0.91	0.91
10	3	11	-0.45	0.27	0.21
11	3	11	-0.45	0.27	0.21
12	11	11	1.00	1.00	1.00
13	10	10	1.00	1.00	1.00
14	8	11	0.45	0.73	0.70
15	4	11	-0.27	0.36	0.24
16	10	11	0.82	0.91	0.91
17	8	11	0.45	0.73	0.70
18	8	11	0.45	0.73	0.70
19	9	10	0.80	0.90	0.90
20	8	11	0.45	0.73	0.70
21	7	11	0.27	0.64	0.57
22	9	10	0.80	0.90	0.90
23	9	11	0.64	0.82	0.81
24	11	11	1.00	1.00	1.00
25	9	11	0.64	0.82	0.81
26	9	11	0.64	0.82	0.81
27	10	11	0.82	0.91	0.91
28	9	11	0.64	0.82	0.81
29	11	11	1.00	1.00	1.00
30	10	11	0.82	0.91	0.91
31	7	11	0.27	0.64	0.57
32	8	11	0.45	0.73	0.70
33	5	11	-0.09	0.45	0.30
34	7	11	0.27	0.64	0.57
35	8	11	0.45	0.73	0.70
36	10	11	0.82	0.91	0.91
37	7	11	0.27	0.64	0.57
38	11	11	1.00	1.00	1.00
39	8	11	0.45	0.73	0.70
40	8	11	0.45	0.73	0.70
41	8	11	0.45	0.73	0.70
42	7	9	0.56	0.78	0.76

Item #	Panelists rating item as "Essential"	Number of panelists responding	CVR*	i-CVI†	Kappa‡
43	5	11	-0.09	0.45	0.30
44	8	10	0.60	0.80	0.79
45	4	10	-0.20	0.40	0.25
46	5	10	0.00	0.50	0.34
47	7	11	0.27	0.64	0.57
48	8	11	0.45	0.73	0.70
49	5	11	-0.09	0.45	0.30
50	8	11	0.45	0.73	0.70
51	7	10	0.40	0.70	0.66
52	7	11	0.27	0.64	0.57
53	9	11	0.64	0.82	0.81
54	8	11	0.45	0.73	0.70
55	5	11	-0.09	0.45	0.30
56	9	11	0.64	0.82	0.81
57	5	11	-0.09	0.45	0.30
58	8	10	0.60	0.80	0.79
59	9	11	0.64	0.82	0.81
60	11	11	1.00	1.00	1.00
61	7	11	0.27	0.64	0.57
62	10	10	1.00	1.00	1.00
63	7	10	0.40	0.70	0.66
64	9	10	0.80	0.90	0.90
65	5	10	0.00	0.50	0.34
66	9	11	0.64	0.82	0.81
67	5	11	-0.09	0.45	0.30
68	6	11	0.09	0.55	0.41
69	7	11	0.27	0.64	0.57
70	10	10	1.00	1.00	1.00
71	5	11	-0.09	0.45	0.30
72	9	11	0.64	0.82	0.81
73	8	11	0.45	0.73	0.70
74	9	11	0.64	0.82	0.81
75	9	11	0.64	0.82	0.81
76	10	11	0.82	0.91	0.91
77	9	10	0.80	0.90	0.90
78	6	10	0.20	0.60	0.50
79	6	9	0.33	0.67	0.60
80	7	9	0.56	0.78	0.76
81	7	9	0.56	0.78	0.76
82	7	9	0.56	0.78	0.76
83	6	9	0.33	0.67	0.60
84	7	9	0.56	0.78	0.76

Table 2. *Continued*

Item #	Panelists rating item as "Essential"	Number of panelists responding	CVR*	i-CVI†	Kappa‡
85	9	10	0.80	0.90	0.90
86	9	10	0.80	0.90	0.90
87	9	10	0.80	0.90	0.90
88	9	10	0.80	0.90	0.90
89	7	10	0.40	0.70	0.66
90	6	9	0.33	0.67	0.60
91	8	10	0.60	0.80	0.79
92	7	10	0.40	0.70	0.66
93	8	11	0.45	0.73	0.70
94	7	9	0.56	0.78	0.76
95	5	10	0.00	0.50	0.34
Mean			0.44	0.72	0.68
Items with 100% agreement as "necessary"			8		
Items with a majority rating as "not necessary" (CVR ≤0)			16		
Items with a statistically significant CVR (≥0.591) ¹³			45%		

* CVR = content validity ratio¹²

† i-CVI=item content validity index¹⁴

‡ kappa = modified kappa statistic¹⁴

significantly modified. Specifically, if at least two-thirds of the panelists agreed that an item was essential (CVR ≥ 0.33), then it was retained; 33 items were eliminated at this point (see Figure). In addition, the survey was decreased in length, the instructions and survey descriptions were clarified, definitions were added for pertinent topics, the rating scale used was changed from a visual analog scale to a Likert scale with verbal descriptors, and the consistency and clarity of the questions were enhanced for the 4 focus areas (psychological wellness, physical activity, weight/nutrition, and smoking cessation).

Even though panelists found some questions to be categorized as "essential," they also recommended changes to the format and wording of those items. Many questionnaire items were somewhat modified to maintain consistency (see Appendix 1 for examples). In addition, the last section of the original survey, "Outcome Expectation," was changed to "Perceived Likelihood." This change was based on the idea that "perceived likelihood" can better predict respondent behavior by comparing their perceived likelihood of good outcomes to their perceived likelihood of bad outcomes.

Step 3: Expert Review – Round 2

Methods

A request to continue to participate in the validity portion of the study was sent to the original panelists through e-mail with a link to the Question Pro online survey platform. Expert

Figure. Research process flow chart.

panelists viewed the updated survey about a month later and again rated the revised items as: "essential," "useful but not essential," or "not necessary;" items were retained if they had a majority consensus (CVR > 0). Panelists also determined whether each section of the survey was clear and made additional comments. The mean CVR value of all items is summarized as the survey-CVR.

Results

Nine expert panelists participated in the second round review. The majority of panelists found that all but 4 items on the second version of the survey were "essential" (Figure and Table 3). There was unanimous agreement (CVR = 1) on 20 items and statistically significant agreement¹³ on 73% of items (Table 3). In the "Perceived Likelihood" section, 3 items on the topic of tobacco use and one item on physical activity were removed. Also, to maintain the consistency of the items and design of the questionnaire, the same 3 questions were used in each of the 4 topic areas in the "Perceived Likelihood" section (II.B).

Table 3. Phase I: Round 2 – Content Validity for Revised Survey

Item #	Panelists rating item as "Essential"	Number of panelists responding	CVR*	i-CVI†	Kappa‡
1	6	9	0.33	0.67	0.60
2	5	9	0.11	0.56	0.41
3	6	9	0.33	0.67	0.60
4	8	9	0.78	0.89	0.89
5	9	9	1.00	1.00	1.00
6	6	9	0.33	0.67	0.60
7	5	9	0.11	0.56	0.41
8	6	9	0.33	0.67	0.60
9	7	9	0.56	0.78	0.76
10	6	9	0.33	0.67	0.60
11	6	9	0.33	0.67	0.60
12	9	9	1.00	1.00	1.00
13	6	9	0.33	0.67	0.60
14	9	9	1.00	1.00	1.00
15	9	9	1.00	1.00	1.00
16	8	9	0.78	0.89	0.89
17	9	9	1.00	1.00	1.00
18	9	9	1.00	1.00	1.00
19	9	9	1.00	1.00	1.00
20	9	9	1.00	1.00	1.00
21	9	9	1.00	1.00	1.00
22	9	9	1.00	1.00	1.00
23	9	9	1.00	1.00	1.00
24	9	9	1.00	1.00	1.00
25	9	9	1.00	1.00	1.00
26	9	9	1.00	1.00	1.00
27	9	9	1.00	1.00	1.00
28	8	9	0.78	0.89	0.89
29	9	9	1.00	1.00	1.00
30	8	9	0.78	0.89	0.89
31	8	9	0.78	0.89	0.89
32	7	9	0.56	0.88	0.87

Item #	Panelists rating item as "Essential"	Number of panelists responding	CVR*	i-CVI†	Kappa‡
33	8	9	0.78	0.89	0.89
34	9	9	1.00	0.89	0.89
35	9	9	1.00	1.00	1.00
36	9	9	1.00	1.00	1.00
37	8	9	0.78	0.89	0.89
38	8	9	0.78	0.89	0.89
39	9	9	1.00	1.00	1.00
40	7	8	0.75	0.88	0.87
41	8	9	0.78	0.89	0.89
42	9	9	1.00	1.00	1.00
43	6	9	0.33	0.67	0.60
44	7	9	0.56	0.78	0.76
45	7	9	0.56	0.78	0.76
46	7	9	0.56	0.78	0.76
47	5	9	0.11	0.56	0.41
48	6	9	0.33	0.67	0.60
49	5	9	0.11	0.56	0.41
50	6	9	0.33	0.67	0.60
51	7	9	0.56	0.78	0.76
52	6	9	0.33	0.67	0.60
53	5	9	0.11	0.56	0.41
54	7	9	0.56	0.78	0.76
55	7	9	0.56	0.78	0.76
56	7	9	0.56	0.78	0.76
57	5	9	0.11	0.56	0.41
58	5	9	0.11	0.56	0.41
Mean			0.67	0.83	0.80
Items with 100% agreement as "necessary"			20		
Items with a majority rating as "not necessary" (CVR ≤0)			4		
Items with a statistically significant CVR (≥0.653) ¹³			60%		

* CVR = content validity ratio¹²

† i-CVI=item content validity index¹⁴

‡ kappa = modified kappa statistic¹⁴

The updated survey consisted of Part I: "Physical Therapist Characteristics" and "Health Promotion Patterns" (28 items), and Part II: "Self-efficacy" of providing health promotion interventions and "Perceived Likelihood" of positive patient outcomes based on providing health promotion interventions (28 items). Thus, the final revised survey had a total of 56 items (see Figure and online supplement) and a survey-CVR of 0.66. Based upon the 9 expert panelists, a CVR of 0.548 would be considered statistically significant at the 0.05 level (one-tailed test).¹³ Based on this criteria, the survey as a whole would be considered to have significant content validity. In addition,

using recommendations by Polit et al,¹⁴ an alternative, less stringent, formula to Lawshe's method¹² of calculating CVR, the average survey-content validity index (CVI) was 0.83. This is above the recommended minimum CVI of 0.80, but below the recommended 0.90; however, 100% of items included in the final survey had a modified kappa agreement on relevance¹⁴ of at least 0.40, "fair" and 88% of items were categorized as "good" or "excellent."¹⁵

PHASE II: TEST-RETEST RELIABILITY

Step 1: Participant Recruitment

Methods

Four hundred licensed PTs, randomly selected from a sample of convenience of the Alabama Physical Therapy Association's membership database, were invited to participate in the reliability study. Since this phase of the study was not specifically addressing therapists' attitudes, but rather was assessing the reliability of the survey, we did not seek a broader sample. To ensure the members' privacy, the APTA sent an e-mail invitation. The invitation included a link to the Question Pro online survey. To encourage participation, the PTs who completed both surveys were entered into a random drawing for one of two \$50 Visa gift cards. Informed consent was indicated by submission of the survey.

Step 2: Test-retest Administration

Methods

After completing the initial survey, the participants who completed the survey received an e-mail message approximately two weeks later requesting that they retake the survey to determine test-retest reliability. Since test-retest reliability assesses the stability of the instrument over time, the interval between testing should attempt to avoid learning, memory effects, and genuine changes.¹⁶ The two-week interval between the initial test and retest was chosen to minimize memory and learning effects and because two weeks is commonly used in reliability studies.^{16,17}

Results

Eighty-three participants initially completed "The Revised Role of Health Promotion in Physical Therapy Survey" and 53 (64%) participants completed the survey a second time. However, 3 participants were excluded due to incomplete data. Therefore, data from 50 qualified participants were analyzed. The average length of time to complete the survey was 14 minutes for the first test and 11 minutes for the retest. The mean time between testing was 20 days (range 13 to 43). Fifty-six percent of the respondents had doctoral degrees and half worked in an outpatient setting. Seventy-eight percent of the 50 participants in the reliability component of the study did not receive health promotion education while in PT school, but 50% of the 50 participants had continuing education in health promotion and 72% had certificates or degrees that provided education in health promotion (Table 4).

Step 3: Item Analysis

Methods

The original "Role of Health Promotion in Physical Therapy Survey"⁷ had multiple levels of measurement.¹⁸ Upon modifications in the survey, the scales were all nominal (categorical) scales¹⁸ and therefore the weighted kappa statistic was used as a measure of test-retest agreement.¹⁶

Table 4. Demographics of the 50 Reliability Study Participants in Phase II

Demographic Information	Number	(%)
Highest Physical Therapy Degree		
Bachelors	12	(24%)
Masters	10	(20%)
PhD (or equivalent)	4	(8%)
DPT (entry-level)	17	(34%)
tDPT (transition)	7	(14%)
Current Practice Setting		
Acute Care Hospital	6	(12%)
Sub-acute Rehab Hospital (In-Patient)	2	(4%)
Health System or Hospital Based	14	(28%)
Outpatient Facility or Clinic		
Private Out-Patient Office or Group Practice	11	(22%)
SNF/ECF/ICF	6	(12%)
School System	4	(8%)
(Preschool/Primary/Secondary)		
Academic Institution (Post-Secondary)	0	(0%)
Health and Wellness Facility	7	(14%)
Research Center	0	(0%)
Industry	0	(0%)
Other	0	(0%)
Type of Health Promotion Education		
Education in PT school		
Yes	7	(14%)
No	39	(78%)
Don't know	4	(8%)
Continuing education after PT school		
Yes	24	(48%)
No	26	(52%)
Degrees or certificates in addition to PT degree		
Yes	36	(72%)
No	14	(28%)

Results

In the "Health Promotion Patterns in Physical Therapy Practice" section (I.B.), 16 of the 23 items (~70%) demonstrated at least "moderate" agreement (kappa ranging from 0.4 to 0.6) and were relatively evenly distributed among the topic areas, with 1 item ("Frequency of which you use education to address physical activity and fitness") having "substantial" agreement (Table 5). Of the 16 items in the "Self-Efficacy" section (II.A.), only 7 (~44%) had moderate agreement, with the remaining 9 items (~56%) having "poor" agreement (kappa < 0.4; table 6). Five of the 12 items (~42%) in the "Perceived Likelihood" section (II.B.) demonstrated moderate agreement and none demonstrated substantial agreement (Table 7). There was no apparent pattern in the weighted kappa scores, either within the 4 focus areas or related to the types of questions (see Tables 5-7).

DISCUSSION

Physical therapists have a unique opportunity to play a meaningful role in educating patients on health and wellness to prevent chronic conditions, such as cardiac disease, cerebrovascular disease, pulmonary disease, cancer, diabetes, and obesity.^{8,9,19,20} Physical therapists in the role of health promoter have the potential to affect changes in behavior that result in positive patient outcomes and improvement of the nation's health.^{8,9,19,20}

**Table 5. Phase II: Reliability for Section I.B.
(Health Promotion Patterns in Physical Therapy)**

Item number	Topic area	Weighted kappa
Q1A	Mental health	0.41
Q1B	Mental health	0.30
Q1C	Mental health	0.60
Q1D	Mental health	0.43
Q1E	Mental health	0.55
Q1F	Mental health	0.44
Q2A	Nutrition/weight	0.33
Q2B	Nutrition/weight	0.50
Q2C	Nutrition/weight	0.36
Q2D	Nutrition/weight	0.60
Q2E	Nutrition/weight	0.52
Q2F	Nutrition/weight	0.40
Q3A	Physical activity	0.26
Q3B	Physical activity	0.52
Q3C	Physical activity	0.46
Q3D	Physical activity	0.42
Q3E	Physical activity	0.42
Q3F	Physical activity	0.65*
Q4A	Tobacco abuse	0.60
Q4B	Tobacco abuse	0.60
Q4C	Tobacco abuse	0.38
Q4D	Tobacco abuse	0.26
Q4E	Tobacco abuse	0.38

*signifies substantial agreement

Table 6. Phase II: Reliability for Kappa Scores for Section II.A. (Self-Efficacy)

Item number	Topic area	Weighted kappa
Q1A	Mental health	0.33
Q1B	Mental health	0.59
Q1C	Mental health	0.27
Q1D	Mental health	0.30
Q2A	Nutrition/weight	0.39
Q2B	Nutrition/weight	0.36
Q2C	Nutrition/weight	0.50
Q2D	Nutrition/weight	0.45
Q3A	Physical activity	0.31
Q3B	Physical activity	0.51
Q3C	Physical activity	0.50
Q3D	Physical activity	0.43
Q4A	Tobacco abuse	0.29
Q4B	Tobacco abuse	0.33
Q4C	Tobacco abuse	0.43
Q4D	Tobacco abuse	0.16

**Table 7. II: Reliability for Section II.B.
(Perceived Likelihood)**

Item number	Topic area	Weighted kappa
Q1A	Mental health	0.42
Q1B	Mental health	0.54
Q1C	Mental health	0.33
Q2A	Nutrition/weight	0.37
Q2B	Nutrition/weight	0.51
Q2C	Nutrition/weight	0.43
Q3A	Physical activity	0.21
Q3B	Physical activity	0.33
Q3C	Physical activity	0.31
Q4A	Tobacco abuse	0.34
Q4B	Tobacco abuse	0.32
Q4C	Tobacco abuse	0.46

Based upon increased focus in the area of health promotion in physical therapy practice,^{8,19-23} development of the survey by Rea et al⁷ was indicated to assess physical therapists' practice of health promotion. The topics surveyed (psychological well-being, nutrition/weight status, physical activity, and tobacco use) are all relevant to physical therapy according to current literature and health care needs.^{8,9,19,21,22} The use of Bandura's social cognitive theory as a starting point with the potential intervention strategies was insightful in anticipation of the need to educate practicing physical therapists in the area of health promotion.²⁴ The endeavor of establishing a valid and reliable tool is an arduous process that requires many steps. The development of the survey tool by Rea et al⁷ was much needed and an extremely valuable starting point in this process.

Based on the results of this study, "The Revised Role of Physical Therapists in Health Promotion Survey" demonstrated content validity as indicated by at least a majority consensus on "essential" items by an expert panel and a survey-CVR = 0.66 for the entire survey, an increase from 0.44 on the original survey. In addition, as assessed by the modified kappa statistic,¹⁴ there was at least "fair" agreement for all items on the revised survey. A high degree of test-retest reliability was not established. The low kappa scores indicated that the questionnaire did not achieve test-retest reliability in the context of this study. All items except one scored poor to moderate in agreement.

The failure of the items to demonstrate substantial test-retest agreement ratings may have been the result of the unclear language and the length of the questionnaire. Most of the participants in the reliability component of the study indicated that they did not receive education in health promotion in physical therapy school. Definitions related to the concepts of health and wellness in the specific topics of tobacco use, psychological well-being, and nutrition/weight status were added to the modified survey, but

may not have provided enough background information for physical therapists to accurately complete the survey. The topics of nutrition/weight status, psychological well-being, and tobacco cessation may be less familiar areas to practicing physical therapists than physical activity. Studies have demonstrated that physical therapists believe that they are knowledgeable and confident in discussing the physical activity area of health promotion.^{7,23} Surprisingly, the results did not produce higher kappa scores in the area of physical activity.

Since the first part of the survey ("Health Promotion Patterns") consists of questions about the types of patient that the respondent treats, it would be expected that the scores of agreement would be lower since there may be variability in the types of patients treated within a 2-week period. However in Part II of the "Self-Efficacy" and "Perceived Likelihood" sections, the therapist's confidence and outcomes expectations based upon providing a health promotion activity are assessed. One would expect these scores to be more consistent since the items are exploring the therapist's confidence and attitudes toward health promotion. All sections within the modified instrument had low agreement. Therefore, it is assumed that the low kappa scores may be attributed to unclear language and length of the survey.

The overall moderate kappa scores indicated limitations in test-retest reliability. There was not a clear pattern of reliability between the administrations of the instrument. Across the 4 topic areas of mental health/wellness, physical activity, nutrition/weight status, and tobacco use, the weighted kappa ranged from poor to moderate. The results indicate that either the tool needs to undergo further changes and development and additional validity and reliability studies, or an entirely new tool should be developed to assess physical therapists' attitudes concerning health promotion. Based on feedback on the language and the format of the instrument, further modification of survey items to achieve consistency and clarity of the questions to improve its reliability may be difficult. Further changes to the revised version of the survey may not be the most advantageous for the development of a consistent, concise, reliable, and valid tool.

By assessing current physical therapy practices in the area of health promotion, strategies can be developed to provide physical therapists with more resources to enhance their participation in health promotion activities. This should assist in recognition of physical therapists as key professionals in the primary and secondary prevention of chronic diseases and disabilities and promotion of health in all individuals.

LIMITATIONS

Both the content validity and reliability aspects of the study were limited by small sample sizes. Only 9 expert panelists participated in the second round of the validity study, which precluded strict use of the CVR to establish statistical significance. Moderate attrition also occurred in the reliability phase of the study. A larger sample size

for both phase I and II would have improved the strength of our validity and helped mitigate the attrition in phase II. Reaching out to a broader geographic population would have also likely improved our sample size, if not our response rate. Physical therapists' current caseloads may have influenced the reliability results. Since questions are based upon the type of patients seen by an individual physical therapist, the differences in the patient population that a therapist sees within the 2 weeks prior to the surveys could influence the responses on the questionnaire. In addition, since we used a local sample of convenience, it is possible that geographical differences in practice influenced therapists' recall of certain items, as their practice patterns and patient variability may have differed. There was variability in the interval length of the test and retesting in reliability, which also may have influenced the low kappa scores. Lastly, participants were included even if they were not currently seeing patients, so they may not have answered the questions based on recent experiences. Despite these limitations, we think this revised health promotion survey is a reasonable method to assess health promotion in physical therapy practice.

Future Directions

Based on the objective results of this study as well as our subjective experience in conducting this study, we advocate for continued revisions to further enhance the validity and increase the reliability of this health promotion survey for physical therapists. In our opinion, a new or revised survey should clearly specify behaviors with concise wording that facilitates rapid completion with specific, defined response options that minimize the need for an "other" answer choice. The survey items should assess (1) the therapist's ideas of what health promotion in physical therapy signifies to the profession, (2) specific ways that health promotion is currently incorporated in practice, and (3) what health promotion topics therapists think should be considered. The item format should have short, definitive, well-defined responses. The new survey should be developed using current survey development tools such as cognitive interviewing, nominal group technique, or a quality enhancement group protocol.²⁴⁻²⁷ Continued emphasis should be placed on the development of a tool that delineates areas of health promotion that physical therapists view as important to improving the health and well-being of their patients/clients. In addition, it may be advantageous to assess only one topic of health promotion rather than multiple topics in order to decrease the number of survey items and provide increased focus within the pertinent topic areas.

CONCLUSION

Health promotion is a growing area of interest in physical therapy.^{23,28-30} The initial research by Rea et al⁷ provided excellent insight into the health promotion practices of physical therapists. However, no psychometric properties for this tool had been established. In assessing the validity of the "Role of Health Promotion in Physical Therapy

Survey,” our expert panelists made many suggestions that resulted in an overall improvement in the validity of the survey, with all items in the revised survey demonstrating at least “fair” agreement on relevance. However, despite efforts to improve the validity of this tool, very few items demonstrated reasonable test-retest reliability. Thus, this revised survey may be used to assess overall health promotion practice patterns, but it would not be useful in assessing changes in self-efficacy for providing these services following an intervention designed to improve or enhance therapists’ self-efficacy in this area. Further work should be done to either strengthen the validity or improve the reliability of the current survey or to develop a new instrument.

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Appendix 1. Examples of Survey Revision

Part I.B.: Health Promotion Practice Patterns

Original Physical Therapy Health Promotion Survey

- 1a. What percent of your patients do you feel are unhappy, sad, depressed, or unsatisfied with life? ____ %

Revised Survey

- 1a. In your practice, categorize how often you have patients/clients that present with mental health problems/mental disorders (such as being unhappy, sad, depressed, anxious, or unsatisfied with life)
- a. never
 - b. seldom
 - c. occasionally
 - d. frequently

Part II.A.: Self-Efficacy

Original Physical Therapy Health Promotion Survey

- 1a. How sure are you that you could assist your patients in reducing feelings of sadness, unhappiness, or depression and increasing feelings of satisfaction with life?
- a. When the patient is aware of the problem and/or desires to improve

Very Sure I <u>Could</u> Assist			Very Sure I <u>Could NOT</u> Assist		
1	2	3	4	5	6

Revised Survey

1. How sure are you that you could assist your patients/clients in reducing feelings of sadness, unhappiness, anxiety, or depression?
- a. When the patient/client is aware of the problem and/or desires to improve
 1. Very Sure You Could Not Assist
 2. Sure You Could Not Assist
 3. Neutral
 4. Sure You Could Assist
 5. Very Sure You Could Assist