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Development of A Tool to Assess Resident Physicians' Perceived Competence for Patient-centered Obesity Counseling

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Abstract

Physicians report a number of barriers to obesity counseling, among them low perceived competence in the ability to counsel. While there is increasing recognition of the need for resident training on counseling, implementation requires residency programs to have the necessary curricula and tools to evaluate training effectiveness. This study's objective was to describe the development and psychometric testing of the Perceived Competence for Obesity Counseling (PCOC) scale. Items were generated based on constructs from the 5A's counseling framework, review of the obesity literature, and expert opinion. The 20-item scale was piloted among 74 resident physicians. Exploratory factor analysis was conducted to identify the number and nature of factors in the scale. Pearson's correlation was used to assess scale validity of the total scores and sub-scale scores association with residents' overall confidence in counseling and outcome expectancy for obesity counseling. Analyses suggested a 3-factor solution. After the removal of cross loading items, eighteen items were retained; eleven items loaded on the first factor, four items on the second factor, and three on the third factor. Cronbach's alpha for the 18-item PCOC scale was 0.95 indicating internal consistency. The PCOC scale was significantly correlated with resident's overall confidence in counseling ($r = 0.60$, $p < 0.01$) and outcome expectancy for obesity counseling ($r = 0.41$, $p < 0.01$). This pilot study suggests PCOC is holds promise as a valid and reliable measure of resident's perceived competence for obesity counseling. Future studies are needed to assess the scale's association with counseling skills.

Keywords: obesity counseling, physician/patient relationship, clinical education, curriculum development/evaluation

1. Introduction

1.1 Problem

Over the last several decades, obesity has become a global epidemic, touching nearly every country in the world (Swinburn et al., 2011). In the United States, one third of the adult population is obese (Flegal, Carroll, Ogden, & Curtin, 2010), placing a substantial burden on the health care system (Colditz, Willett, Rotnitzky, & Manson, 1995; Walker et al., 1996). Behavior counseling is associated with a 5-10% weight loss (McTigue et al., 2003), which significantly lowers the risk of progression to obesity-related illness (Goldstein, 1992; Sherwin et al., 2004). Physician counseling has the potential to effect meaningful change, particularly at the individual level, however, only a minority of physicians provide obesity counseling to their patients (Huang et al., 2004; Loureiro & Nayga, 2006; Stafford, Farhat, Misra, & Schoenfeld, 2000). Physicians report a number of barriers to obesity counseling, among them lack of knowledge and low perceived competence in their skills (Forman-Hoffman, Little, & Wahls, 2006; Jay et al., 2008; Kushner, 1995). Indeed, physicians with lower confidence in their ability to counsel are less likely to provide obesity counseling (Perrin et al., 2008). Consequently, programs aimed at improving physicians' counseling skills and perceived competence for obesity counseling are needed, as are the necessary tools for evaluating such programs. Currently, there are no validated

measurement tools to assess physicians' perceived competence for obesity counseling.

Strong frameworks for patient-centered obesity counseling are available but are rarely taught to physicians-in-training. Patient-centered counseling facilitates change by assessing patient needs and subsequently tailoring the intervention to the patient's readiness to change, personal goals, and unique challenges (Rosal et al., 2001) The 5 A's, Assessing obesity risk and motivation to change; Advising lifestyle change; Agreeing with the patient on collaboratively set goals; Assisting in addressing barriers and resources; and Arranging for follow-up (Jay et al., 2008; Jay, Gillespie, Schlair, Sherman, & Kalet, 2010; Serdula, Khan, & Dietz, 2003) have been endorsed by the U.S. Preventive Services task Force as a framework for behavior change counseling in the clinical setting (Whitlock, Orleans, Pender, & Allan, 2002)

1.2 Need for Resident Training in Patient-centered Counseling

Physician training programs are keenly aware of the need for an increased focus on resident counseling skills. Recently, the Accreditation Council for Graduate Medical Education (ACGME) incorporated core competencies of "patient care" and "interpersonal and communication skills" in an effort to emphasize the importance of a patient-centered approach to counseling (Accreditation Council for Graduate Medical Education, 2007). In order to meet this requirement, residency programs must not only develop the necessary curricula, but will also need tools to evaluate training effectiveness. Typically, evaluation of resident counseling skills is done by direct observation of actual patient encounters or using standardized patients. External evaluation is less subject to bias and typically serves as the reference standard in studies examining the accuracy of self-assessment (D. A. Davis et al., 2006). However, these methods can be both labor intensive and challenging to implement (Glasgow, Emont, & Miller, 2006). Self-assessment is an alternative means for evaluating behaviors. Because it does not rely on an external, independent observer it is easier to implement in real world settings. Unfortunately, self-assessment does not always accurately reflect the actual behavior in question (D. A. Davis et al., 2006). This may especially be the case if the individual performing the self-assessment does not have a clear understanding of the behavior they are being asked to report on, in this case patient-centered counseling. However, it is possible that if residents are instructed on patient-centered counseling, their ability to self-assess their own counseling skills, and their associated confidence in those skills, could improve over time. In fact, previous studies examining physician behavior suggest that training can improve the accuracy between observed behavior and self-report (Eva & Regehr, 2005; Moret, Tequi, & Lombrail, 2004). In general, perceived competence is a measure of the confidence one has to perform a certain task or behavior and has been associated with the actual performance of that behavior, including the ability to counsel (Eckstrom, Hickam, Lessler, & Buchner, 1999; Lu & Dollahite, 2010; Martin, Bruskiewitz, & Chewning, 2010; Nikendei et al., 2011). Creation of a self-assessment tool to assess perceived competence for counseling could provide an efficient means for evaluating longitudinal evaluation of resident training in the area of patient-centered counseling, including for obesity.

1.3 Purpose of the Research

The objective of this study was to develop and validate a scale to assess residents' perceived-competence for patient-centered obesity counseling (PCOC). This work was done as a part of a larger effort to develop an obesity-counseling intervention tailored for residents (Burton et al., 2011). Development of this tool represents the first step in a body of work aimed at answering several research questions related to resident training:

(1) Does resident training in patient-centered counseling improve: (a) perceived competence in patient-centered counseling and (b) patient-centered counseling skills?

(2) Are improvements in perceived competence associated with improvements in counseling skills?

2. Methods

2.1 Research Participants and Setting

At a medical school in Alabama, resident physicians were invited to participate in a three-hour interactive obesity counseling workshop for resident physicians based on motivational interviewing (MI) techniques.

A convenience sample of 74 residents completed a pre- and post-intervention questionnaire to assess their knowledge, beliefs, and confidence (PCOC) in obesity counseling.

2.2 Conceptual Framework and Item Generation of PCOC

Candidate items were designed to assess perceived competence with regard to implementing the 5 A's, which served as the basis for our intervention: Assessing obesity risk and motivation to change; Advising lifestyle change; Agreeing with the patient on collaboratively set goals; Assisting in addressing barriers and resources; and Arranging for follow-up) (Jay et al., 2008; Jay et al., 2010; Serdula et al., 2003).

An important objective of our program was to help residents use a patient-centered approach to counseling. To that end, candidate items also reflect principles drawn from Motivational Interviewing. Motivational Interviewing emphasizes the

patient's control and explores their ambivalence about change, and unlike traditional patient education it does not rely on the physician to provide often untailored advice to their patients (Miller & Rollnick, 1991).

Initially, 2-3 items were developed to address perceived competencies associated with each of the 5 A's. This version of the scale was circulated to a multidisciplinary team of experts for review. The team included a nutritionist, two psychologists with expertise in Motivational Interviewing, a clinical weight-loss expert, and an expert in Health Education. Upon completion of this phase, the PCOC comprised of 3-5 items for each component (total items = 20). Items were scored on a 5-point Likert scale with scores ranging from 5 (extremely confident) to 1 (not at all confident).

2.3 Pilot Scale Testing

The 20-item draft version of the PCOC was administered as part of a baseline assessment to a convenience sample of Internal Medicine and Pediatric residents at a medical school in Alabama who were participating in an obesity counseling workshop. Residents completed a baseline questionnaire that included brief demographics, the draft version of the PCOC, as well as a single-item measure of overall confidence in counseling, and a single item measuring outcome expectancy for obesity counseling ("Physicians can be effective in helping patients lose weight"). Appropriate permission was obtained from the leadership of both programs and the entire protocol was reviewed and approved by the institution's Institutional Review Board. All participants provided written informed consent.

2.4 Statistical Analyses

To explore the factor structure of the PCOC, we employed a principal component analysis (PCA) with Varimax rotation. An item was believed to load on a given factor if the factor loading was .50 or greater for that factor, and was less than .40 for each of the remaining two. The process was repeatedly applied, during which the cross-loading items were removed sequentially (Hatcher, 1994; Kim, 1978a, 1978b; Tabachnick, 2007). Coefficient alpha reliability estimates were subsequently calculated for each factor (Cronbach, 1951). As a preliminary assessment of criterion validity, total scores and subscale scores were correlated with a single-item measure of overall confidence in counseling and a single-item measure of outcome expectancy for obesity counseling. All analyses were conducted using SAS version 9.3 (S.I. Inc., 2012).

3. Results

3.1 Sample Characteristics

A convenience sample of 74 residents completed the questionnaire. (Table 1) Approximately half of the sample was female (57%) and training in Internal Medicine (57%). Residents were fairly evenly distributed across Post Graduate Year (PGY) level. Of note, the majority of residents plan to pursue a subspecialty.

Characteristic	Percent
Gender	
Female	57.5
Male	42.7
Track	
Internal Medicine	57.5
Pediatrics	37.0
Med/Peds	5.5
Training Year	
PGY 1	37.0
PGY 2	27.4
PGY 3	31.5
PGY 4	2.7
Career plans	
Primary Care	16.4
Hospitalist	5.5
Subspecialty	60.3
Undecided	17.8

Note: PGY = postgraduate year

The sample size of 74 on a 20-item questionnaire yielded a case per item ratio of 3.7 (MacCallum, Zhang, & Hong S., 1999). A review of eigenvalues and the scree plot suggested a 3-factor solution (Nunnally & Berstein, 1994). Table 2 provides the factor structure for the scale. Eleven items were found to load on the first factor. Based on how item content related back to the 5A's, this factor was labeled Assist and Agree. Four items were found to load on the second factor, subsequently labeled Assess and Advise. Three items loaded on the third factor, subsequently labeled Arrange. Coefficient alpha reliability estimates for each factor are provided as parenthetical values in Table 2.

Table 2. Factor structure of Perceived Competence for Obesity Counseling (PCOC) scale

Items	Assist and Agree	Assess and Advise	Arrange
Factor 1			
I can personalize healthy lifestyle advice for each patient I see.	.74		
I can collaborate with my patients and formulate a dietary plan for weight loss.	.80		
I can arrange for close follow-up with a patient trying to lose weight.	.57		
I can determine a patient's readiness to change their behavior.	.65		
I can assist a patient with weight loss during a brief counseling session.	.75		
I can provide the patient with examples of weight loss strategies from which they can choose.	.77		
I can address resistance to change when advising a patient on weight loss.	.73		
I can work with my patient to select specific strategies to lose weight.	.73		
I can work with my patient to identify short term weight loss goals.	.56		
I can help patients identify potential barriers to weight loss.	.71		
I can collaborate with my patients and formulate an exercise plan for weight loss.	.74		
Factor 2			
I can assess a patient's body mass index (BMI) and obesity risk.		.67	
I can advise a patient about the possible impact of diet and physical activity on weight.		.74	
I can inform the patient about potential health benefits of weight loss.		.81	
I can advise patients on the impact of weight loss on their health.		.67	
Factor 3			
I feel comfortable referring my patient to ancillary services.			.82
I can refer my patient to community resources to aid them in their weight loss attempt.			.83
I can connect my patient to physical activity resources in the community.			.68

Cronbach's alpha for the 18-item PCOC scale was 0.95 indicating internal consistency. Means, standard deviations, and intercorrelations for PCOC variables are provided in Table 3.

Components	Mean	SD	1	2	3	4
Assist & Agree	41.4	6.9	(.94)			
Assess & Advise	16.6	2.2	.68	(.82)		
Arrange	10.6	2.2	.63	.54	(.82)	
Total PCOC scale	72.6	10.8	.97	.80	.76	(.95)

3.2 Preliminary Assessment of External Validity

Analyses revealed significant correlation between the PCOC Scale and a single-item measure of general confidence for obesity counseling as well a single-item measure of outcome expectancy for obesity counseling (Table 4).

Table 4. Correlations of physician confidence and outcome expectancy with all sub-scale and full-scale scores on the Perceived Competence for Obesity Counseling Scale (PCOC)

Items	Factor 1	Factor 2	Factor 3	PCOC
I feel well equipped to counsel my patients about weight loss.	.58**	.44**	.51**	.60**
Primary Care physicians can be effective in helping patients lose weight.	.36**	.38**	.34**	.41**

*Note Factors: 1. Assist & Agree, 2. Assess & Advise, 3. Arrange , 4. PCOC scale; **p<.01*

4. Discussion and Implications

4.1 Validation of PCOC

In this study, we developed an 18-item scale to assess residents' perceived competence for patient-centered obesity counseling. Analyses indicated a three-factor solution and a preliminary inspection of criterion validity suggested a relationship between scale results and general confidence in counseling and outcome expectancy related to obesity counseling. If future studies confirm these findings and demonstrate correlation with actual counseling skills, this measurement tool could be used to assess the effectiveness of programs designed to improve residents' confidence in counseling as part of a process to improve skills.

Perceived competence for an activity is thought to influence an individual's actual behavior or functioning because it helps determine selection of goals, persistence with regard to those goals, as well as problem solving around perceived

barriers to selected goals (Larson & Daniels, 1998). In the area of mental health, providers' perceived competence for counseling has been positively associated with counseling performance (Murdock, Wendler, & Nilsson, 2005). Empirical evidence from professions including education and nursing suggest that individuals with higher perceived competence experience less burnout, increased job satisfaction and better job performance (Murdock et al., 2005). More recently, Perrin and colleagues used a single-item question on confidence for counseling and found that while physician confidence for counseling was low at baseline, training aimed at improving residents' obesity counseling skills increased confidence and frequency of weight-related counseling (Perrin et al., 2008).

The current study did not assess residents' confidence in counseling in relation to actual counseling skills. It is possible that programs aimed at improving residents counseling might improve perceived competence in counseling without qualitatively improving their actual skills. A recent meta-analysis reviewed the accuracy of physician self-assessment compared to observed measures of competence and found that physicians have a limited ability to accurately self-assess (David A. Davis et al., 2006); those who were the least skilled and those who were the most confident were the least accurate. However, the review goes on to suggest that training may reduce the discrepancy between observation and self-assessment by "encouraging the internalization of objective measurements or benchmarks of performance" (Eva & Regehr, 2005). In the case of behavioral counseling, physicians' lack of training on patient-centered counseling may impede their ability to accurately self- assess their skills. If residents are taught the components of patient-centered counseling and given opportunities to practice those skills, their ability to self-assess may improve. If so, a tool such as PCOC could provide a proxy measure for counseling skills that is practical and efficient when compared to other evaluation methods such as direct observation or standardized patient interviews.

4.2 Limitations and Strengths

The data in the study come from a small sample of residents from a single site, limiting our ability to generalize. While the stability of factor loadings can be threatened with sample sizes below 200, previous investigators have found smaller subsamples (n=78) sufficient to achieve factor solutions comparable to their full-factor solutions (Arirndell & van der Ende, 1985). Nevertheless, future studies with a larger sample are needed in order to perform confirmatory analyses. Also, 65% of this sample planned to pursue a subspecialty or hospitalist career and as such many may not perceive as great a need for counseling.

Despite these limitations, there are strengths worth noting. First, the instrument we developed is brief, taking about 15 minutes to complete, which makes it easy to incorporate into residency training evaluation. Second, the tool has the potential to be adapted for counseling on other behaviors, such as smoking. This has been done successfully for similar tools that assess patients' perceived competence for health behaviors (Wallston, Rothman, & Cherrington, 2007).

4.3 Implications for Future Research

Despite recommendations that physicians counsel their patients to lose weight, a minority of physicians regularly counsels their patients, citing lack of confidence in their skills as a significant barrier. As residency programs increasingly emphasize patient-centered counseling in order to improve physician skills and comply with ACGME core requirements, tools such as the one we developed will be useful for gauging the impact of teaching programs. Future studies are needed to assess the extent to which resident's perceived competence in patient-centered obesity counseling predicts actual performance in terms of both frequency and quality.

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Conflict of Interest

The authors have no conflict of interest to report. All authors have read this manuscript and given their permission for it to be published.

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