

RESEARCH

Establishing Validity Evidence for Parallel Patient-Provider Empathy Scales to Drive Self-reflection

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Objective. Student pharmacists must cultivate self-awareness to ensure that they can assess their skill development and abilities, including affective domain skills such as empathy. External feedback can augment development, but validated assessments are needed for accuracy. Thus, the objectives of this study were to establish validity evidence for the revised version of the Kiersma-Chen Empathy Scale (KCES-R), compare student self-perceptions and simulated patient perceptions of student empathy using a parallel patient scale (KCES-PV), and evaluate student reflections on the encounter.

Methods. Student pharmacists completed an assessment of their self-perceptions of empathy (KCES-R) before and after the patient encounter. Simulated patients completed the KCES-PV regarding the student pharmacists' empathy immediately after the encounter. Student pharmacists also watched their encounter videos and completed a self-reflection on their use of empathy. Responses were analyzed using statistical tests, whereas students' reflections were examined using thematic analysis.

Results. Results showed that the KCES-R contains two factors with high internal consistency and can detect changes in empathy. Student pharmacists' self-perceptions of their empathy abilities appeared higher than when their empathy abilities were evaluated by simulated patients. Student pharmacists had a strong belief in the importance of expressing empathy during patient encounters and indicated a need for further development.

Conclusion. This study provides validity evidence for the use of the KCES-R and presents a parallel scale that may be used by simulated patients. Validated parallel scales along with reflective practice could be a potential avenue to grow self-awareness and empathy by allowing students to receive feedback and then reflect on their perceived versus actual demonstration of the skill.

Keywords: Kiersma-Chen Empathy Scale (KCES), empathy, pharmacy, validity evidence, self-assessment

INTRODUCTION

Empathy, namely the ability to understand someone's situation, communicate that understanding, and then act upon it, is an important aspect of health care and has been shown to improve patient outcomes.¹ Empathy has both cognitive and affective elements, is multidimensional, as it includes behavior, feelings, attitudes, and knowledge, and allows health care professionals to challenge assumptions and build relationships.¹ As such, empathy is a key component of providing culturally sensitive care, and

empathetic individuals have effective cross-cultural communication.¹ Through empathy, health care professionals can increase trust, patient adherence, and health outcomes.¹ The Accreditation Council for Pharmacy Education (ACPE) Standards 2016 list empathy as a communication skill that student pharmacists should develop during their Doctor of Pharmacy (PharmD) program before embarking on advanced pharmacy practice experiences (APPEs).² The Center for the Advancement of Pharmacy Education's (CAPE) Educational Outcomes also include empathy as an example of domain 3.6: "Effectively communicate verbally and nonverbally when interacting with an individual, group, or organization."^{2,3}

Empathy can be challenging to assess. Self-assessment of empathy is a typical approach, and it is an important

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ability for student pharmacists to develop. CAPE domain 4.1 focuses on student pharmacists' ability to judge their own personal and professional skills and abilities.³ However, self-assessments are limited by self-biases, which commonly lead to overestimation of personal abilities (ie, knowledge, leadership skills, social skills).⁴ In order to help address overestimation of ability, student pharmacists should also receive external feedback, which will improve their awareness and ability to self-assess.³ While teachers and peers can provide valuable external feedback, patient assessment of empathy could help student pharmacists and other health care providers to better understand how patients perceive them and their true ability to empathize. For student pharmacists, objective structured clinical examinations (OSCEs) are standardized patient encounters with simulated patients that allow students to practice and be assessed on their professional skills including empathy.⁵ These OSCEs are an opportunity for student pharmacists to self-reflect on the encounter while also receiving feedback from simulated patients and observers.⁶

Affective domain skills can be challenging to accurately evaluate due to their subjective nature and lack of a reference point; thus, measures are needed to accurately assess student pharmacists' skills when interacting with patients. Empathy can be measured with the Kiersma-Chen Empathy Scale (KCES), a validated survey instrument⁷ that has recently been revised.⁸ Other validated tools of empathy exist, such as the Jefferson Scale of Empathy, which was developed through a Delphi process with physicians and validated in other health professions.⁷ The KCES, alternatively, was developed from a definition of empathy and validated in pharmacy and nursing students.⁷

The objectives of this study were to establish additional validity evidence for the KCES-R (revised version), compare student pharmacists' self-assessments of their empathy abilities with patient perceptions of students' empathy abilities using a parallel KCES-PV (patient version), and evaluate students' self-assessments of their interaction with a simulated patient.

METHODS

Institutional review board approval was obtained from Cedarville University and the University of Wyoming. Second-year student pharmacists at Cedarville University School of Pharmacy and the University of Wyoming completed OSCEs in the fall of 2019, and all were invited to participate in the study. Before the OSCE, student pharmacists completed the KCES-R. Then, student pharmacists interacted with the simulated patients for 10 minutes based on a case prompt. Simulated patients at Cedarville University, who were trained in basic communication and role

playing, were hired from a local school of medicine's simulation program and received an hour of specific training on each OSCE case. At the University of Wyoming, simulated patients were drama/theater students who were trained by one of the investigators in basic communication, reading patient scripts, and role playing for one hour prior to interacting with the student pharmacists. The OSCE case used in this study was a homeless patient at a community pharmacy picking up a new prescription for levetiracetam following an emergency room visit for a seizure. Student pharmacists were expected to obtain a focused and relevant history, deal with a communication issue, provide patient education, counsel the patient, discuss monitoring plans, and indicate how follow-up should occur. During the OSCE, student pharmacists had the opportunity to show empathy for the patients' concerns over taking a new medication, access to health care, and their housing situation. Following the OSCE, student pharmacists completed the KCES-R again, and the simulated patients completed the KCES-PV based upon the specific student encounter. Student pharmacists then watched a recording of their OSCE and completed a written reflection discussing their empathy self-awareness (Figure 1). The prompt for the self-reflection was as follows: "Please describe what you learned about empathy from this activity. Also, what did you learn about self-awareness from this activity? What steps will you take to improve?" There were no word limits or other instructions given regarding the reflection.

The creation and validation of the original KCES has been described previously.⁷ A revised version of the KCES was created using psychometric data from studies that used the KCES, and cognitive interviews of pharmacy and nursing students.⁸ The KCES-R contains 14 items divided into two sections. The first seven items assess globally how necessary it is for health care professionals to be able to perform different aspects of empathy (eg, identify with a patient's feelings), with seven response categories, anchored by 1="unnecessary," 4="moderately necessary," and 7="extremely necessary." The second seven items serve as a self-assessment of personal ability to perform those same aspects of empathy, with seven response categories anchored by 1="does not describe me," 4="describes me moderately well," and 7="describes me extremely well." Responses were coded as 1 through 7, and scores for each domain were computed by summing items from the domain.⁸ Permission to use the KCES scales at no cost can be obtained by contacting the corresponding author (AC).

Following the creation of the KCES-R, the KCES-PV was developed to parallel the KCES-R with the goal of providing students with external feedback of their empathy, and for comparing a student pharmacist's self-assessment

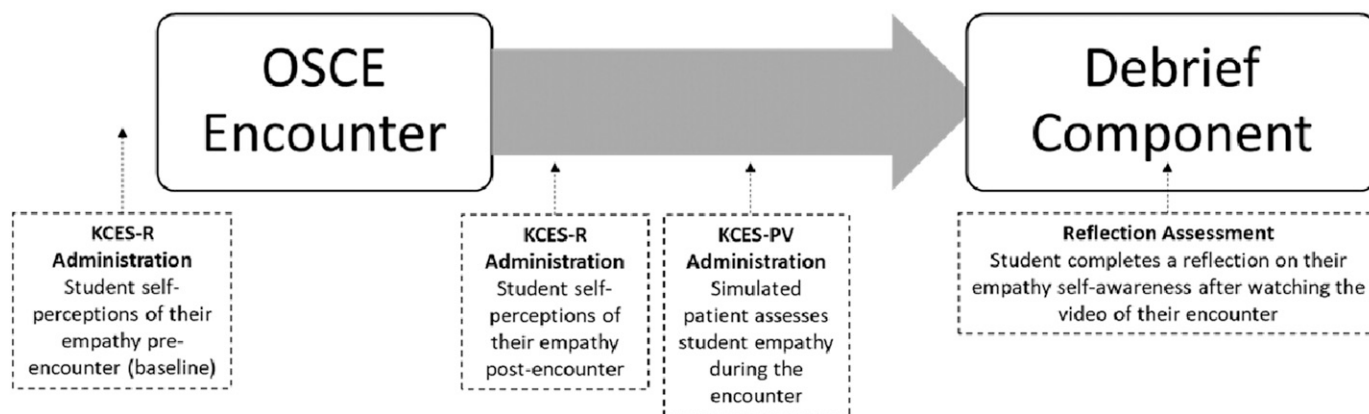


Figure 1. Overview of methods utilized to establish validity evidence for parallel empathy scales and engage students in a simulated patient encounter. Abbreviations: OSCE=Objective structured clinical examination; KCES-R=Kiersma-Chen Empathy Scale-Revised; KCES-PV= Kiersma-Chen Empathy Scale-Patient Version.

of their empathy ability with a patient’s or simulated patient’s assessment of the student’s empathy. The KCES-PV has similar questions and response categories as the KCES-R for the first section about assessing global views on health care providers being able to perform different aspects of empathy. The second section of the KCES-PV parallels the KCES-R, but it asks about the ability of the patient’s health care professional or student health care professional. The questions are framed from the patient’s perspective (eg, identify with my feelings), with seven response options anchored by 1=“does not describe them well,” 4=“describes them moderately well,” and 7=“describes them extremely well.” Responses were coded as 1 through 7, and scores for each domain were computed by summing items from the domain.

Data were analyzed using SPSS Statistics version 27 (IBM Corp). First, descriptive (ie, means, standard deviations, median, range, interquartile ranges, skewness, kurtosis, and Shapiro-Wilk statistic) and bivariate statistics (ie, Pearson correlation coefficients) were inspected. Then, exploratory factor analysis using principal axis factoring extraction and varimax rotation was conducted for the KCES-R. Prior to interpreting findings from the exploratory factor analysis, the value of the Kaiser-Meyer-Olkin (KMO) value and the Bartlett test of sphericity were evaluated to ensure the data were factorable and to assess sampling adequacy. We planned to remove any items with low inter-item correlations (<.3) and to place items with strong loadings on multiple factors (>.4) in the factor with the best conceptual fit. The number of factors to retain was determined through joint examination of the scree plot and considering factors with eigenvalues greater than one. As confirmation, a parallel analysis Monte Carlo simulation was performed to create 95% confidence intervals of eigenvalues with 1000 parallel data sets from permutations of the raw data.⁹ Paired

t tests and Wilcoxon signed rank tests were used to compare KCES-R domain scores of student pharmacists before and after a simulated patient encounter. The KCES-R and KCES-PV empathy skill domain sum scores were compared using descriptive statistics.

Lastly, a thematic analysis of the student pharmacists’ reflections was also performed. Using a grounded theory approach, a member of the research team reviewed the reflections and coded the responses into themes. The themes were checked by another member of the research team to ensure accuracy and to resolve any questions regarding the themes.

RESULTS

Of the 94 second-year student pharmacists who were invited to participate in the activity, all (100%) participated in the activity, 94 (100%) completed the presurvey, and 90 (96%) completed the postsurvey. Thirty-six (38%) of the student pharmacists were men, and 70 (74%) were White. Forty-five students were from the Cedarville University School of Pharmacy (48%), and 49 (52%) were from the University of Wyoming.

All items in the KCES-R had responses ranging from one to seven. Item 5 had a skewness statistic of -2.5 and kurtosis statistic of 9.2, both outside of acceptable ranges. In addition, this item displayed a high mean (6.4). All other items in the KCES-R had skewness values between -2 and 2 and kurtosis values between -7 and 7; however, mean values for items were between 5.3 and 6.3, above the true midpoint of 4. All items had significant *p* values from the Shapiro-Wilk test, indicating non-normal distributions. However, due to the sample size of >30 and limited skewness and kurtosis issues, the data are reported using both parametric statistical tests for ease of presentation

and interpretation and nonparametric tests to ensure robustness of the results against possible normality assumption violations.

The exploratory factor analysis KMO value was .906, indicating “marvelous” sampling adequacy,¹⁰ and the Bartlett test of sphericity was significant ($p < .001$), indicating the data were factorable. Two factors were retained, global empathy beliefs (items 1-7) and personal empathy ability (items 8-14), accounting for 74.2% of the variance in initial eigenvalues and 70.1% of the variance in rotation sums of squared loadings. Rotated factor loadings, inter-item correlations, and corrected item-scale correlations are shown in Table 1. Factor loadings for the global empathy beliefs domain ranged from .66-.90, and for the personal empathy ability domain they ranged from .75-.81 (Table 1). Within each domain, individual items had moderate to strong inter-item correlations and corrected item-scale correlations ranging from .72-.88. Cronbach’s alpha was .936 and .938 for the global and personal domains, respectively. Mean sum scores (Table 2) on each domain were well above the true midpoint of 28, and slight skewness (-2.2) and kurtosis (7.8) were observed for the general domain. The two domains had a moderate Spearman rank correlation of .427 ($p < .001$).

A comparison of the initial KCES-R administration (pre), and administration after a simulated patient encounter (post) is shown in Table 2 for the 90 individuals who completed both (linked using student-generated codes).

Significant changes in empathy domain scores were detected after the completion of a simulated patient experience ($p = .004$ and $p = .006$, respectively) in a paired *t* test, with similar results for the Wilcoxon signed rank test. Individual items were also inspected; five items from each subscale were significantly higher after the experience (items 1, 2, 4, 6, 7, 8, 10, 11, 13, 14). The pre- and post-activity domain scores were also correlated (global views of empathy in health care $r = .659$, $p < .001$; personal empathy ability $r = .669$, $p < .001$).

Simulated patients completed 93 (99%) KCES-PV surveys after interacting with student pharmacists. Eight simulated patients rated 44 Cedarville University School of Pharmacy students, and seven rated 49 University of Wyoming students. In the present study, these observations were not linked to individual students, precluding a direct comparison of student evaluations of their own empathy ability with simulated patients’ ratings. Simulated patients’ ratings of students, regarding empathy ability, are presented and compared to student ratings in Table 3. Overall, it appears that simulated patients used a broader range of ratings for students than students did for themselves; students may have rated their own ability higher than simulated patients did. However, caution is advised in interpreting these numerical differences, as student empathy ratings are nested by rater (with an average of eight ratings per rater), and there was some small variation present across raters in terms of mean and dispersion of ratings.

Table 1 Exploratory Factor Analysis of the KCES-R Indicated Two Distinct Subscales

Item	Factor 1	Factor 2	IIC ^a	ITC ^b
Global empathy beliefs				
1. Comprehend patient experiences	.71		.55-.73	.72
2. Express an understanding of patients’ feelings	.87		.59-.89	.87
3. Value patients’ point of view	.90		.64-.89	.88
4. Consider patients’ feelings to provide patient-centered care	.81		.61-.82	.82
5. Be caring in order to build a strong relationship with patients	.87		.66-.83	.87
6. Identify with patients’ feelings	.73		.55-.76	.75
7. View the world from patients’ perspective	.66		.56-.66	.72
Personal empathy ability				
8. Comprehend patient experiences		.80	.62-.76	.77
9. Express an understanding of patients’ feelings		.81	.63-.79	.81
10. Value patients’ point of view		.77	.63-.80	.81
11. Consider patients’ feelings to provide patient-centered care		.80	.64-.80	.84
12. Be caring in order to build a strong relationship with patients		.76	.62-.79	.80
13. Identify with patients’ feelings		.78	.65-.79	.81
14. View the world from patients’ perspective		.75	.60-.73	.75

Abbreviations: KCES-R=Kiersma-Chen Empathy Scale-Revised.

^a Inter-item correlations among items within factor.

^b Corrected item-scale correlation for items within factor.

Table 2. Changes in KCES-R Domains From Before to After the Empathy Encounter

Item	Presurvey (n=94) Mean (SD)	Postsurvey (n=90) Mean (SD)	p value
Global views. How necessary is it for healthcare professionals to be able to... ^a			
Comprehend patient experiences	6.20 (1.12)	6.44 (0.80)	
Express an understanding of patients' feelings	6.21 (1.00)	6.44 (0.72)	
Value patients' point of view	6.32 (1.04)	6.47 (0.78)	
Consider patients' feelings to provide patient-centered care	6.18 (1.07)	6.49 (0.76)	
Be caring in order to build a strong relationship with patients	6.39 (1.00)	6.53 (0.74)	
Identify with patients' feelings	5.99 (1.37)	6.34 (0.86)	
View the world from patients' perspective	5.90 (1.36)	6.34 (0.85)	
Sum of global empathy views domain	43.2 (6.82)	44.9 (4.79)	.004 ^c
Personal ability. I am able to... ^b			
Comprehend patient experiences	5.44 (1.08)	5.67 (1.07)	
Express an understanding of patients' feelings	5.59 (1.18)	5.62 (1.19)	
Value patients' point of view	5.95 (1.11)	6.19 (0.97)	
Consider patients' feelings to provide patient-centered care	5.78 (1.07)	6.07 (1.06)	
Be caring in order to build a strong relationship with patients	6.01 (1.07)	6.16 (1.08)	
Identify with patients' feelings	5.67 (1.15)	5.81 (1.23)	
View the world from patients' perspective	5.34 (1.15)	5.81 (1.22)	
Sum of personal empathy ability domain	39.8 (6.68)	41.3 (6.58)	.006 ^c

Abbreviations: KCES-R=Kiersma-Chen Empathy Scale-Revised.

^a Items had response categories ranging from one to seven with anchors at 1="unnecessary," 4="moderately necessary," and 7="extremely necessary".

^b Items had response categories ranging from one to seven with anchors at 1="does not describe me," 4="describes me moderately well," and 7="describes me extremely well".

^c Paired-samples *t* test was used to determine significance, defined as *p*<.05.

Student pharmacists at Cedarville University School of Pharmacy (n=39) also completed reflections following the OSCE, and they agreed to allow these reflections to be

Table 3. Comparison of the After-Encounter KCES-R and the KCES-PV Ability Domains

Scale descriptives	KCES-R ability domain sum score ^a (N=90)	KCES-PV ability domain sum score ^a (N=93)
Mean	41.3	33.2
Standard deviation	6.9	11.4
Range	17-49	8-49
25th percentile	39	26
50th percentile (median)	42	34
75th percentile	46	44.5

Abbreviations: KCES-R=Kiersma-Chen Empathy Scale-Revised; KCES-PV= Kiersma-Chen Empathy Scale-Patient Version.

^a Items had response categories ranging from one to seven with anchors at 1="does not describe me/them," 4="describes me/them moderately well," and 7="describes me/them extremely well" with seven items for a possible score range of 7-49.

used for research purposes. Table 4 displays the qualitative analysis of the students' reflections. Key themes included students developing an understanding of what empathy is and the importance of practice in developing empathy and greater self-awareness. The use of practice along with feedback seemed to highlight areas for improvement, such as the impact of body language and listening skills.

DISCUSSION

Empathy is crucial for the development of a successful and effective pharmacist-patient relationship, as it helps to build rapport with patients, increase trust, and improve medication adherence as well as patient health-related outcomes.¹ This requires self-reflection of one's knowledge, skills, and ability to be empathetic.¹ Empathy can be developed through experience, reflection, and feedback that is reinforced across multiple settings.¹ This study provides validity evidence for use of the KCES-R in student pharmacists and introduces the KCES-PV for patient or simulated patient use. Taken together, these two measures provide two methods of assessing students' skills in expressing empathy with patients (self-assessment and patient/standardized patient rating).

Table 4. Qualitative Analysis of Student Pharmacists' Reflections

Theme (No.)	Representative quotes
Definition of empathy (21)	<ul style="list-style-type: none"> • “When I think of empathy, I think of showing compassion and understanding of someone’s situation and to put yourself in their position.”
Practice (13)	<ul style="list-style-type: none"> • “Our self-awareness increases the more we do this.” • “It is important to practice empathy daily.”
Patient resources (10)	<ul style="list-style-type: none"> • “For the future, I plan to investigate different resources for patients who have needs with transportation, finding a provider and other difficulties they may face with their health care needs.”
Body language (6)	<ul style="list-style-type: none"> • “This demonstrated to me the importance of body language and making the other person feel comfortable.” • “One aspect I realized was that the way that I speak and the body language I portray can have an impact on the conversation.”
Listening (6)	<ul style="list-style-type: none"> • “Next time I will take a breath and listen to the patient.” • “Someone that patients can talk to and not feel judged or misheard.”

Student pharmacists in the current project rated the importance of empathy very highly (global beliefs domain sum scores).¹¹ Students’ ratings regarding the importance of empathy may be attributed to an emphasis on empathy in their pharmacy school curricula.^{12,13} Specifically, the literature suggests that programs often use communication encounters, communication courses, OSCEs, and practice laboratories to address empathy.¹

In the current project, students appeared to rate their empathy ability at a higher level than it was rated by simulated patients. There are several potential causes for this. First, students may overestimate their personal abilities.⁴ Second, a social desirability bias may exist (overreporting of positive or more desirable attributes, such as growth in empathy, and minimizing negative or undesirable attributes) in student responses as well. Thus, it is highly likely that some students may rate their ability higher than is deserved after using a survey instrument or a simulated patient experience (often known as the Dunning-Kruger effect).¹⁴ Lastly, it is interesting that global empathy beliefs and perceptions of students’ own skills were moderately correlated; thus, perhaps the higher a student perceived the importance of empathy, the greater they rated their own ability, possibly again reflecting the social desirability bias.

Student pharmacists’ post-OSCE reflections revealed a conceptual understanding of empathy but also a realization that practice was needed for further development, as plans were made for subsequent encounters. This is an interesting finding, since it may indicate that post-communication reflections for a specific interaction coupled with completion of a self-assessment of empathy may allow student pharmacists to assess their empathy skills and abilities more accurately. Deeper reflection may promote better

self-awareness. For example, Smith, Norman, and Decety found that multiple measures of students’ empathy can allow for a more complete assessment.¹⁵ In our case, students’ reflections of the specific interaction with the patient may have produced a more vivid form of recall than mere completion of a self-assessment questionnaire of empathy. The specificity of the reflection questions may also have allowed the student pharmacists to better recollect their use of empathy for a specific health care interaction. Thus, use of patient ratings, watching the encounter, and then reflecting on the encounter may be a useful approach for students to grow and build self-awareness. Regular assessment and feedback are key to developing empathy in students.¹ Using validated assessments that allow for self-evaluation and rater/evaluator/simulated patient feedback can further contribute to the self-reflection process. Experiential learning and patient interactions, often in clinical settings, can also contribute to the development of empathy.¹ Future work could evaluate whether having student pharmacists reassess themselves after watching a video of the encounter results in greater convergence of their responses with the patients’ perceptions as well as how this develops during further patient interactions in experiential learning.

The KCES-R and KCES-PV are promising measures of empathy for use by health professional educators and researchers alike. The KCES has been used in thousands of student and health professional assessments of empathy internationally, including numerous articles in pharmacy education. Recently revised to reflect the validity evidence from those administrations, the KCES-R provides students with an opportunity to self-assess and report their perceived empathy skills. Self-assessment is an important skill for student pharmacists to develop, as it aligns with

CAPE domain 4.1.³ The KCES-PV affords the patient the opportunity to provide their perspective of the student pharmacists' ability to show empathy. Obtaining the patient's perspective is essential for more comprehensive insight into the student's demonstration of empathy. This external feedback provides a more complete and personally unbiased perspective of the student pharmacist's true ability to empathize with patients, and can be useful for identifying specific aspects of student empathy in need of further development.^{16,17} This study focused on the KCES-PV for rating student empathy ability, but future studies in other settings (ie, health care provider empathy in primary care) could expand the use of this scale to aid clinician professional development by providing a method of obtaining patient feedback.

The limitations of this study include that two institutions were used for implementation. Therefore, results may not be generalizable to other institutions. Further, the student population that participated in this project may not be a representative sample of other student pharmacists. National statistics indicate that 37% of PharmD graduates are men; our sample was a little lower at 30%. Fall 2020 student enrollments indicated that approximately 48% of students were White; our sample was higher at 70%.¹⁸ Moreover, this study used simulated patient care experiences and, therefore, may not be illustrative of patient care that is provided to patients in actual practices. Due to the nature of this study, student and simulated patient responses could not be linked, which limited the ability to compare responses, and demonstration of validity evidence for the KCES-PV was limited. Only one patient case scenario was used for this study; thus, case specificity effect could have occurred. This case presented a homeless patient at a community pharmacy picking up a new prescription (levetiracetam) following an emergency room visit for a seizure. Due to the somewhat complex nature of the patient scenario, student pharmacists may have either missed or not recognized opportunities to show empathy. The complexity of the patient scenario also may be a strength of this study, as from this single patient encounter alone, student ratings of empathy beliefs and skills increased. Lastly, as mentioned above, the responses of study participants could be subject to social desirability bias.

CONCLUSION

Student pharmacists must develop self-awareness of how they are perceived and should practice demonstrating empathy, an important skill, to patients. Intentional use of an instrument to consider one's own empathy beliefs and abilities (KCES-R), a tool to capture a patient's views of those abilities (KCES-PV), and a process for reflection

may help grow student pharmacists' self-awareness and empathy. The KCES-R and KCES-PV are promising measures of empathy for use by health professional educators and researchers. Use of the KCES-R and the KCES-PV provides a more comprehensive assessment of a student pharmacist's ability to empathize with patients, which can assist in identifying specific aspects of student empathy in need of further development.

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