Gathering Validity Evidence for Matching Patient and Provider Empathy Scales to Promote Self-Reflection

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Abstract

Pharmacy students need to develop self-awareness to effectively evaluate their progress in skills, particularly in affective areas like empathy. While outside input can support growth, reliable tools are essential for precise evaluation. Therefore, this research aimed to gather additional validity support for the updated Kiersma-Chen Empathy Scale (KCES-R), contrast students' own views of their empathy with those from simulated patients via a matching patient instrument (KCES-PV), and explore students' thoughts on their patient interactions. Pharmacy students rated their own empathy levels (using KCES-R) prior to and following a patient interaction. Right after the interaction, simulated patients rated the students' empathy with the KCES-PV. Students then reviewed video recordings of their sessions and provided written thoughts on how they applied empathy. Quantitative data underwent statistical examination, while qualitative reflections were analyzed thematically. The analysis indicated that the KCES-R consists of two dimensions with strong reliability and sensitivity to empathy shifts. Students tended to rate their empathy higher than simulated patients did. Students strongly valued demonstrating empathy in patient care and recognized areas for improvement. Findings offer supporting validity for applying the KCES-R and introduce a companion tool for use by simulated patients. Combining reliable matching instruments with reflection practices may enhance self-awareness and empathy development, enabling students to compare external feedback with their own perceptions of performance.

Keywords: Kiersma-Chen Empathy Scale (KCES), Empathy, Pharmacy, Validity evidence, Self-assessment

Introduction

Empathy—the capacity to comprehend another's circumstances, convey that comprehension, and respond accordingly—plays a vital role in healthcare delivery and contributes to better patient results [1]. It encompasses both thinking and feeling components, spans multiple aspects including actions, emotions, beliefs, and understanding, and helps practitioners question biases while fostering connections [1]. Empathy is therefore essential for delivering care that respects cultural differences, promoting strong intercultural interactions

[1]. By building empathy, healthcare providers can enhance patient trust, compliance, and overall health improvements [1]. The 2016 Standards from the Accreditation Council for Pharmacy Education (ACPE) identify empathy as a core communication competency that pharmacy students should acquire in their PharmD curriculum prior to advanced experiential rotations [2]. Additionally, the CAPE outcomes from the Center for the Advancement of Pharmacy Education highlight empathy within domain 3.6 as part of effective verbal and nonverbal exchanges with individuals, groups, or entities [2, 3].

Measuring empathy presents difficulties. A common method involves self-rating, which is crucial for pharmacy students to master. CAPE domain 4.1 emphasizes students' competence in appraising their own capabilities in personal and professional contexts [3]. Yet, self-ratings often suffer from personal biases that result in inflated views of one's competencies (e.g., in

knowledge, leadership, or interpersonal areas) [4]. To counteract this inflation, incorporating outside evaluations can boost awareness and refine self-judgment accuracy [3]. Although input from instructors or classmates is beneficial, evaluations from patients can provide pharmacy students (and other providers) with insights into patient viewpoints and actual empathetic performance. In pharmacy training, objective structured clinical examinations (OSCEs) involve standardized scenarios with actors portraying patients, offering chances to hone and gauge professional competencies, including empathy [5]. Such OSCEs enable students to review their performance personally while obtaining input from actors and facilitators [6].

Skills in the affective domain are hard to gauge precisely because of their inherent subjectivity and absence of clear benchmarks; reliable instruments are thus required for evaluating student-patient interactions. One option is the Kiersma-Chen Empathy Scale (KCES), an established tool [7] that has undergone recent updates [8]. Alternative established measures include the Jefferson Scale of Empathy, created via expert consensus among doctors and tested across health fields [7]. In contrast, the KCES originated from a specific empathy framework and was initially confirmed among pharmacy and nursing trainees [7].

This investigation sought to build further validity support for the KCES-R (updated edition), examine differences between pharmacy students' self-rated empathy and patient-rated empathy via the aligned KCES-PV (patient viewpoint version), and assess students' personal evaluations of their simulated patient sessions.

Materials and Methods

Ethical approval was secured from the institutional review boards at Cedarville University and the University of Wyoming. Second-year pharmacy students from the Schools of Pharmacy at both Cedarville University and the University of Wyoming took part in objective structured clinical examinations (OSCEs) during the fall semester of 2019, with all students invited to join the research.

Prior to the OSCE, participants filled out the revised Kiersma-Chen Empathy Scale (KCES-R). Each student then engaged in a 10-minute interaction with a simulated patient according to a predefined case scenario.

At Cedarville University, simulated patients were recruited from a nearby medical school's standardized patient program; they had prior training in fundamental communication and portrayal techniques and received an additional hour of case-specific instruction. At the University of Wyoming, the simulated patients were theater/drama students who underwent one hour of training delivered by a study investigator, covering basic communication skills, script interpretation, and role enactment before meeting the pharmacy students.

The scenario involved a patient experiencing homelessness who was collecting a new prescription for levetiracetam at a community pharmacy after an emergency department visit for a seizure. Students were required to gather a targeted medical history, address a specific communication challenge, deliver education and counseling, outline monitoring parameters, and explain follow-up procedures. The case provided opportunities for students to demonstrate empathy toward the patient's worries about starting a new medication, barriers to healthcare access, and unstable housing circumstances.

Immediately after the OSCE, students completed the KCES-R once more, while simulated patients rated the individual student's empathy using the KCES-PV. Subsequently, students viewed video recordings of their own performances and submitted written reflections on their empathy-related self-awareness **(Figure 1).** The reflection prompt read: "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?" No restrictions were placed on word count or additional guidelines for the reflections.
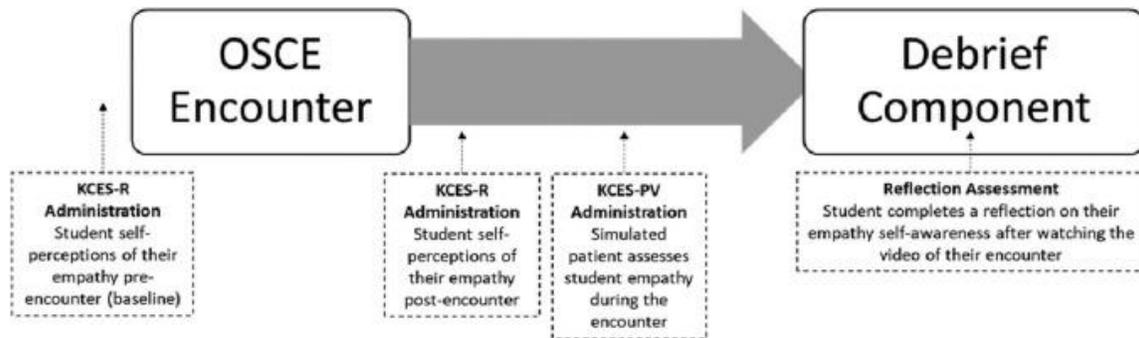
Figure 1. Overview of the procedures employed to gather validity support for the matched empathy instruments and to involve students in a standardized patient interaction. Abbreviations: OSCE = Objective Structured Clinical Examination; KCES-R = Kiersma-Chen Empathy Scale-Revised; KCES-PV = Kiersma-Chen Empathy Scale-Patient Version.

The development and initial validation of the original KCES have been reported elsewhere [7]. An updated version, the KCES-R, was constructed based on psychometric results from prior investigations that applied the KCES, along with cognitive interviews conducted with pharmacy and nursing students [8]. The KCES-R consists of 14 items organized into two parts. The initial seven items evaluate overall perceptions of how essential it is for healthcare providers to exhibit various components of empathy (e.g., relating to a patient's emotions), using a seven-point scale anchored at 1 = "unnecessary," 4 = "moderately necessary," and 7 = "extremely necessary." The subsequent seven items focus on self-evaluation of one's capability to carry out those same empathy components, with a seven-point scale anchored at 1 = "does not describe me," 4 = "describes me moderately well," and 7 = "describes me extremely well." Item responses were scored from 1 to 7, and subdomain totals were calculated by adding the relevant items [8]. Authorization to use the KCES instruments without charge can be requested by reaching out to the corresponding author (AC).

After developing the KCES-R, the KCES-PV was designed to mirror it closely, aiming to supply students with external evaluations of their empathy and to enable comparisons between a pharmacy student's self-rated empathy skills and a patient's (or simulated patient's) rating of those skills. The KCES-PV retains comparable items and response options in its first section, which addresses general beliefs about the necessity for healthcare providers to demonstrate different empathy elements. The second section aligns with the KCES-R but shifts the focus to the abilities of the patient's healthcare provider or student provider. Items are worded

from the patient's viewpoint (e.g., relating to my emotions), using a seven-point scale anchored at 1 = "does not describe them well," 4 = "describes them moderately well," and 7 = "describes them extremely well." Responses were scored from 1 to 7, with subdomain totals obtained by summing the corresponding items.

Analyses were conducted with SPSS Statistics version 27 (IBM Corp). Initially, descriptive statistics (including means, standard deviations, medians, ranges, interquartile ranges, skewness, kurtosis, and Shapiro-Wilk tests) and bivariate measures (Pearson correlation coefficients) were examined. Exploratory factor analysis was then performed on the KCES-R using principal axis factoring for extraction and varimax rotation. Before interpreting the results, the Kaiser-Meyer-Olkin (KMO) measure and Bartlett's test of sphericity were reviewed to confirm factorability and sample adequacy. Items showing weak inter-item correlations (< 0.3) were slated for removal, and those with substantial cross-loadings (> 0.4) were assigned to the factor offering the strongest theoretical alignment. Factor retention was decided by inspecting the scree plot together with eigenvalues exceeding 1. For verification, a parallel analysis via Monte Carlo simulation generated 95% confidence intervals for eigenvalues based on 1000 permutations of the original data [9].

Changes in KCES-R subdomain scores from before to after the simulated patient interaction were assessed using paired t-tests and Wilcoxon signed-rank tests. Descriptive statistics were applied to compare the empathy skill subdomain totals from the KCES-R and KCES-PV.

Finally, thematic analysis was applied to the pharmacy students' written reflections. Adopting a grounded theory framework, one research team member examined the reflections and assigned codes that emerged into themes. A second team member reviewed the themes for consistency and to address any discrepancies.

Results and Discussion

A total of 94 second-year pharmacy students were invited to take part in the study, and all (100%) engaged in the OSCE activity. All 94 (100%) submitted the pre-encounter survey, while 90 (96%) completed the post-encounter survey. Among the participants, 36 (38%) were male and 70 (74%) identified as White. Forty-five students (48%) attended Cedarville University School of Pharmacy, and 49 (52%) were from the University of Wyoming.

Responses on the KCES-R items spanned the full scale from 1 to 7. Item 5 exhibited skewness of -2.5 and kurtosis of 9.2, exceeding typical acceptable limits, and also showed a high mean score (6.4). The remaining items displayed skewness between -2 and 2 and kurtosis between -7 and 7, though their means ranged from 5.3 to 6.3, exceeding the scale midpoint of 4. Shapiro-Wilk tests yielded significant p-values for all items, suggesting deviations from normality. Given the sample size exceeding 30 and minimal concerns with distribution shape, findings are presented using both parametric tests for clarity and interpretability and nonparametric tests to confirm robustness against potential violations of normality assumptions.

For the exploratory factor analysis, the Kaiser-Meyer-Olkin measure was .906, classified as "marvelous" for sampling adequacy [10], and Bartlett's test of sphericity was significant (p < .001), confirming suitability for factoring. Two factors were extracted: one representing overall beliefs about empathy (items 1–7) and the other reflecting self-perceived empathy capability (items 8–14). These accounted for 74.2% of variance based on initial eigenvalues and 70.1% after rotation. Rotated factor loadings, inter-item correlations, and corrected item-total correlations are detailed in **Table 1**. Loadings ranged from .66 to .90 for the beliefs domain and .75 to .81 for the ability domain **(Table 1).** Within each domain, items showed moderate to strong inter-correlations, with corrected item-scale correlations between .72 and .88. Internal consistency was high, with Cronbach's alpha values of .936 for the beliefs domain and .938 for the ability domain. Domain sum score means **(Table 2)** substantially exceeded the midpoint of 28, with mild skewness (-2.2) and kurtosis (7.8) noted in the beliefs domain. The two domains demonstrated a moderate Spearman correlation of .427 (p < .001).

Table 1. Exploratory factor analysis results for the KCES-R revealing two separate dimensions

Item	Factor 1 (Global Beliefs About Empathy)	Factor 2 (Self-Perceived Empathy Capability)	Inter-Item Correlations (within factor)[a]	Corrected Item-Total Correlations (within factor)[b]
Global Beliefs About Empathy				
1. Understand patients' experiences	.71		.55–.73	.72
2. Communicate comprehension of patients' emotions	.87		.59–.89	.87
3. Appreciate patients' perspectives	.90		.64–.89	.88
4. Take patients' emotions into account to deliver patient-focused care	.81		.61–.82	.82
5. Demonstrate compassion to foster strong patient relationships	.87		.66–.83	.87
6. Relate to patients' emotions	.73		.55–.76	.75
7. See situations from the patient's viewpoint	.66		.56–.66	.72
Self-Perceived Empathy Capability				
8. Understand patients' experiences		.80	.62–.76	.77
9. Communicate comprehension of patients' emotions		.81	.63–.79	.81
10. Appreciate patients' perspectives		.77	.63–.80	.81

11. Take patients' emotions into account to deliver patient-focused care	.80	.64–.80	.84
12. Demonstrate compassion to foster strong patient relationships	.76	.62–.79	.80
13. Relate to patients' emotions	.78	.65–.79	.81
14. See situations from the patient's viewpoint	.75	.60–.73	.75

Abbreviations: KCES-R = Kiersma-Chen Empathy Scale-Revised. [a] Range of correlations between items within the same factor. [b] Corrected correlation between the item and the total score of its factor.

Table 2. Changes in KCES-R domain scores before and after the simulated patient encounter

Item	Presurvey (n=94) Mean (SD)	Postsurvey (n=90) Mean (SD)	p value
Global Beliefs: How essential is it for healthcare professionals to...[a]			
Understand patients' experiences	6.20 (1.12)	6.44 (0.80)	
Communicate comprehension of patients' emotions	6.21 (1.00)	6.44 (0.72)	
Appreciate patients' perspectives	6.32 (1.04)	6.47 (0.78)	
Take patients' emotions into account to deliver patient-focused care	6.18 (1.07)	6.49 (0.76)	
Demonstrate compassion to foster strong patient relationships	6.39 (1.00)	6.53 (0.74)	
Relate to patients' emotions	5.99 (1.37)	6.34 (0.86)	
See situations from the patient's viewpoint	5.90 (1.36)	6.34 (0.85)	
Sum score – Global empathy beliefs domain	**43.2 (6.82)**	**44.9 (4.79)**	**.004[c]**
Self-Perceived Ability: I am able to...[b]			
Understand patients' experiences	5.44 (1.08)	5.67 (1.07)	
Communicate comprehension of patients' emotions	5.59 (1.18)	5.62 (1.19)	
Appreciate patients' perspectives	5.95 (1.11)	6.19 (0.97)	
Take patients' emotions into account to deliver patient-focused care	5.78 (1.07)	6.07 (1.06)	
Demonstrate compassion to foster strong patient relationships	6.01 (1.07)	6.16 (1.08)	
Relate to patients' emotions	5.67 (1.15)	5.81 (1.23)	
See situations from the patient's viewpoint	5.34 (1.15)	5.81 (1.22)	
Sum score – Personal empathy ability domain	**39.8 (6.68)**	**41.3 (6.58)**	**.006[c]**

Abbreviations: KCES-R = Kiersma-Chen Empathy Scale-Revised. [a] Response scale: 1 = "unnecessary," 4 = "moderately necessary," 7 = "extremely necessary." [b] Response scale: 1 = "does not describe me," 4 = "describes me moderately well," 7 = "describes me extremely well." [c] Significance determined by paired-samples t-test (p < .05).

Table 2 presents a comparison of the initial KCES-R administration (pre) with the administration following a simulated patient encounter (post) for the 90 participants who completed both assessments, linked via student-generated codes. Paired t tests revealed significant increases in empathy domain scores after the simulated patient experience (p = .004 and p = .006), with similar findings observed using the Wilcoxon signed-rank test. Analysis of individual items indicated that five items from each subscale showed significant increases post-experience (items 1, 2, 4, 6, 7, 8, 10, 11, 13, 14). Additionally, pre- and post-activity domain scores were positively correlated (global empathy in health care r = .659, p < .001; personal empathy ability r = .669, p < .001).

Simulated patients completed 93 (99%) KCES-PV surveys following interactions with student pharmacists,

with eight simulated patients rating 44 Cedarville University students and seven rating 49 University of Wyoming students. In this study, these ratings were not linked to individual students, preventing direct comparison between students' self-assessments of empathy and simulated patients' evaluations. **Table 3** summarizes the simulated patients' ratings of student empathy ability and compares them with students' self-ratings. Overall, simulated patients appeared to use a wider range of ratings, while students tended to rate themselves higher than the simulated patients did. However, these differences should be interpreted cautiously, as student self-ratings were nested within raters (averaging eight ratings per rater) and some minor variability existed in the mean and dispersion of ratings across raters.

Table 3. Comparison of post-encounter scores on the empathy ability domains of the KCES-R and KCES-PV

Descriptive Statistic	KCES-R Ability Domain Sum Score (n=90)	KCES-PV Ability Domain Sum Score (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] Each domain consists of seven items scored from 1 to 7 (anchors: 1 = "does not describe me/them," 4 = "describes me/them moderately well," 7 = "describes me/them extremely well"), yielding a possible total score range of 7–49.

Thirty-nine student pharmacists from Cedarville University School of Pharmacy completed post-OSCE reflections and consented to their use for research. The qualitative analysis of these reflections is presented in **Table 4.** Major themes that emerged included students gaining a deeper understanding of empathy, recognizing the value of deliberate practice in building empathic skills, and developing increased self-awareness. The combination of practice and feedback helped illuminate specific areas for growth, particularly the role of body language and active listening skills.

Table 4. Qualitative analysis of student pharmacists' reflections

Theme (Frequency)	Representative Quotes
Definition of empathy (21)	"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)	"Our self-awareness increases the more we do this." "It is important to practice empathy daily."
Patient resources (10)	"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)	"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)	"Next time I will take a breath and listen to the patient." "Someone that patients can talk to and not feel judged or misheard."

Empathy plays a vital role in establishing effective pharmacist-patient relationships, as it fosters rapport, enhances trust, boosts medication adherence, and leads to improved patient health outcomes [1]. Achieving this requires ongoing self-reflection on one's knowledge, skills, and empathic capabilities [1]. Empathy can be cultivated through repeated experiences, reflective practices, and feedback delivered across diverse contexts [1].

The present study offers validity evidence supporting the application of the KCES-R among student pharmacists and introduces the KCES-PV as a tool for ratings by actual or simulated patients. Combined, these instruments provide dual perspectives for evaluating students' empathic expression toward patients: self-assessment and patient/standardized patient evaluation.

In this project, student pharmacists assigned high importance to empathy, reflected in elevated scores on the global beliefs domain [11]. This strong valuation may stem from the prominent focus on empathy within their pharmacy curriculum [12, 13]. Existing literature indicates that pharmacy programs frequently incorporate communication simulations, dedicated communication courses, objective structured clinical examinations (OSCEs), and skills laboratories to cultivate empathy [1]. Notably, students tended to rate their own empathic abilities higher than simulated patients did. Several explanations may account for this discrepancy. Students might overestimate their competencies [4]. Additionally, social desirability bias could influence responses, leading individuals to overreport favorable traits (such as empathic growth) while downplaying less desirable ones. Consequently, some students may inflate their self-ratings following survey completion or simulated encounters—a phenomenon aligned with the Dunning-Kruger effect [14]. Furthermore, the moderate correlation

observed between global empathy beliefs and self-perceived skills suggests that students who placed greater value on empathy were more likely to rate their abilities highly, potentially reinforcing social desirability bias.

Analysis of post-OSCE reflections showed that student pharmacists demonstrated a solid conceptual grasp of empathy while recognizing the necessity of ongoing practice for improvement, as evidenced by their intentions for future interactions. This finding suggests that combining specific post-communication reflections with empathy self-assessments may enable more accurate evaluation of one's empathic skills. Enhanced reflection could promote greater self-awareness. For instance, Smith, Norman, and Decety demonstrated that employing multiple empathy measures yields a more comprehensive evaluation [15]. Here, reflecting on a particular patient interaction likely evoked more vivid recall than a general self-assessment questionnaire alone. The targeted nature of reflection prompts may have further aided students in recollecting their empathic behaviors during that specific encounter.

Thus, incorporating patient ratings, video review of encounters, and subsequent reflection represents a promising strategy for fostering growth and self-awareness among students. Consistent assessment and feedback are essential for empathy development [1]. Validated tools that facilitate both self-evaluation and external feedback (from raters, evaluators, or simulated patients) can enrich the reflective process. Experiential learning through real patient interactions in clinical settings also supports empathy cultivation [1].

Future research could investigate whether students who re-evaluate their performance after viewing video recordings of their encounters achieve closer alignment between self-ratings and patient perceptions, as well as track how this alignment evolves during advanced experiential training.

The KCES-R and KCES-PV appear to be valuable tools for assessing empathy among health professional students and can be effectively utilized by educators and researchers. The KCES has been employed globally in thousands of assessments of student and health professional empathy, including numerous studies within pharmacy education. Recently updated to reflect validity evidence from these prior uses, the KCES-R allows students to self-assess and report their perceived empathy skills, a critical competency aligned with CAPE domain 4.1 [3]. The KCES-PV provides patients with the opportunity to evaluate the student pharmacists' capacity

for empathy. Gathering the patient perspective is vital for obtaining a more comprehensive understanding of the student's empathetic performance. Such external feedback delivers an unbiased view of the student's true ability to empathize, helping to pinpoint specific areas for improvement [16, 17]. While this study focused on using the KCES-PV to rate student empathy, future research could expand its application to other contexts, such as assessing clinician empathy in primary care, thereby supporting professional development through patient feedback.

This study has several limitations. Only two institutions participated, which may limit the generalizability of the findings. Additionally, the student sample may not fully represent the broader population of student pharmacists; for example, national data indicate that 37% of PharmD graduates are male, whereas the study sample included 30%, and approximately 48% of students nationally are White, compared with 70% in this sample [18]. The study employed simulated patient care experiences, which may not fully reflect real-world patient interactions. Due to study design, student and simulated patient responses could not be linked, restricting direct comparison and limiting the validation evidence for the KCES-PV. Only one patient scenario—a homeless patient at a community pharmacy picking up a new prescription for levetiracetam following an emergency room visit for a seizure—was used, introducing potential case specificity effects. The scenario's complexity may have caused students to miss or not recognize opportunities to demonstrate empathy; however, this complexity might also be a strength, as student ratings of empathy beliefs and skills increased after this single encounter. Finally, responses may be influenced by social desirability bias.

Conclusion

Developing self-awareness and practicing empathy are essential skills for student pharmacists. Intentional use of tools such as the KCES-R for self-assessment, the KCES-PV for patient feedback, and guided reflection can enhance student pharmacists' awareness of their empathy and promote skill development. The KCES-R and KCES-PV provide promising measures for assessing empathy in health professional education, offering a more comprehensive evaluation of a student pharmacist's ability to empathize with patients and helping to identify areas in need of further development.

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