Empathy In Chinese Pharmacy Undergraduates: Implication for Integrating Humanities Into Professional Pharmacy Education

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ABSTRACT

At present, fostering and promoting empathy, an important humanistic quality, are believed ethical imperatives, and should be carried through the pharmacy education to facilitate the interpersonal and philosophical development of healthcare students. A cross-sectional study used the JSE-HPS (Jefferson Scale of Empathy-Health Profession Student version) to assess 263 Chinese pharmacy undergraduates from 1st to 4th year at Wuhan University of Science and Technology. Attached to the scale was a survey containing questions on demographics and favorite implementation model of humanistic education. Mean score of JSE-HPS was 112.58. Cronbach's alpha coefficient was 0.81. Three factors emerging in the factor analysis of JSE-HPS are "perspective taking", "compassionate care" and "ability to stand in patients' shoes". And empathy score of 4th-year students was highest. In addition, the three most popular implementation models were "Social activities", "Extracurricular activity on pharmacy humanistic education", and "Humanistic education should be infiltrated and integrated within the existing professional curriculum", respectively. Our study findings indicate that humanistic education in the foundations courses for 1st to 3rd academic year pharmacy students need to be focus on. For successful practice, humanistic education that promotes empathy has to be integrated within the existing training programs for pharmacy undergraduate students in a vivid way.

Key words: Empathy, Jefferson scale, pharmacy education, humanistic education, pharmacist-patient communication.

INTRODUCTION

One of the main goals for pharmacy education program is to help students obtain a higher level of knowledge and skill regarding humanity and morality.[1] Humanistic education involving social science,[2] ethics,[3] philosophy[4] has been inseparable from professional pharmacy education. Connecting pharmacy education and the humanities can make students more effective as pharmacists in detecting and responding to their patients' needs and problems by connecting their professional knowledge to depictions and meanings of illness experiences.[5] Empathy, as an important humanistic quality and over-arching philosophical stance,[6] has long been described as an essential element of professionalism in humanistic medicine[7] and a core ingredient in healthcare provider-patient relationships.[8] The concept of empathy has been defined for the context of patient care: predominantly a cognitive attribute that involves an understanding of patients' concerns, the capacity to communicate this understanding, and an intention to help.[9] Along with the prescribing physician, pharmacists, as the most accessible health care professionals,[10] are in a unique position to offer patients their specialized skills and knowledge about the safe and rationale use of medications, thus have an important role in informing and counseling patients. From the perspective of patients, empathy was believed as one of the most important domains composing the pharmacist caring behaviors constructs in migraineurs,[11] dementia[12] and asthma[13]

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treatment. However, lack of empathy was also identified as a pharmacy-related barrier to improved pharmacist-patient communication.[14] Patients expressed a desire for skilled communication and behavioral aspects including empathy from the pharmacists.[15] Therefore, it is undoubtedly important that pharmacists should create opportunities to foster empathetic behaviour toward the patients and learn to develop empathy in order to provide compassionate, patient-centered care.[6]

At present, fostering and promoting empathy are believed ethical imperatives, and have been carried through the medical[16] and pharmacy[17,18] education to facilitate the interpersonal and philosophical development of healthcare students. The importance of displaying empathy during all healthcare interactions has been recognized and integrated in American pharmacy education.[19]

In China, pharmacy curricula are mainly in the professional areas, while humanistic education is restricted to ideology and politics curriculum thus relatively less. Lack of humanistic education centered on empathy in pharmacy teaching is responsible for deficiency in communication skills amongst healthcare providers, in turn; long-standing tension in the healthcare provider-patient relationship in China.[20] Therefore, there is still great potential to improve humanistic education centered on empathy in Chinese pharmacy teaching. Furthermore, no guideline for improving empathy and related skills in Chinese pharmacy education is likely a great barrier. We thus posed the questions including: what is the humanistic current state of Chinese pharmacy education? And from the perspective of pharmacy students, what is the favorite implementation model of humanistic education centered on empathy? The answers to these questions can provide a reference for educators to implement curricular changes and develop educational guideline. Jefferson Scale of Empathy- Health Profession Student version (JSE-HPS), a valid and reliable instrument for measuring empathy among pharmacy students,[9,19] was completed by 263 pharmacy undergraduates at College of Medicine, Wuhan University of Science and Technology. Based on students' empathetic qualities, tendencies and willingness, some recommendations about Chinese humanistic education centered on empathy in pharmacy teaching were put forward.

METHODS

Setting and population

This study was conducted from March to April 2014. Based on our calculations, at least 100 participants are needed for a study which would have 90% power (two-tailed test significance level of 0.05) to detect the mean difference of at least 10 points on the JSE-HPS score (with standard deviation of 12 based on external sources).[9,20] Our previous study[21] reported that the overall response rate of survey on the pharmacy undergraduates of our university was 96.6%. Thus, we compensated for an additional dropout rate of 5% due to some students' being unable to participate or uncompleted questionnaires. To facilitate an analysis according to gender and grade, we then decided to increase the sample to all 265 pharmacy students enrolled in Wuhan University of Science and Technology. At this university, students are accepted into the 4-year undergraduate pharmacy program. Age of students at the time of entry is 17 to 20 years. Participation was completely voluntary, and students were not compensated for their participation. The survey was anonymous and voluntary, and written informed consent was obtained from each participant.

Survey instrument

The JSE-HPS instrument was administered to pharmacy students to examine self-reported empathy levels. JSE-HPS is a validated, brief self-report consisting of 20 Likert-type items on a 7-point scale (strongly agree=7, strongly disagree=1) that encompasses 3 underlying factors: perspective taking, compassionate care, and ability to stand in a patient's shoes.[22,23] The 10 negatively worded items were reverse-coded when scored. Higher scores on the JSE-HPS indicated the higher self-reported empathy level and a behavioral tendency favoring empathic engagement in patient care, and scores could range from 20 to 140.

JSE-HPS was translated into Chinese by two researchers for pharmacy education at Wuhan University of Science and Technology. The bilingual version in Chinese and English translated by two bilingual translators was used in this study to ensure the accurate comprehension of respondents. Questions also were solicited about the students' demographic information, including gender, age, academic year and their career specialty intentions. Besides, a question to assess pharmacy students' favorite implementation model of humanistic education centered on empathy was also included. Estimated time to complete the questionnaire was approximately 10 minutes. The questionnaires were distributed and collected immediately after completion, and the integrity of questionnaires was checked by elected class representatives. Only fully completed questionnaires were included in the study and underwent further analysis. And the survey tool was approved by the ethics committee of Wuhan University of Science and Technology (ethics approval reference number: 20130091).

Data analysis

Data from questionnaires that were filled out completely were coded and entered into SPSS14.0. Cronbach's alpha coefficient was calculated to assess the internal consistency aspect of the questionnaire reliability. The underlying factor structure of JSE-HPS was searched using principal component factor analysis with varimax rotation. Besides, the corrected item-total score correlations were also examined. And variance analysis was used to compare the differences in gender, age, career preference and academic year levels. Frequencies and summary statistics were calculated for the results of the question assessing pharmacy students' favorite implementation model of humanistic education presented using valid percentages. Chi-square test was used to analyze differences of favorite implementation model between male and female. Differences were considered to be significant if the p value was less than 0.05.

RESULTS

Responses were received from pharmacy undergraduates from four academic year levels in Wuhan University of Science and Technology. 263 of the 265 completed surveys were effective, only 2 fourth-year students failed to return an administered survey, giving an overall effective response rate of 99.2%. Average age of the samples was 20.98 ± 1.55 years old. Among the 263 respondents, 92 (35.0%) were males and 171(65.0%) were females; 67(25.5%), 57(21.7%), 71 (27.0%) and 68 (25.9%) were studying in first, second, third and fourth-year of the program, respectively. Cronbach's alpha coefficient (r=0.81) was well above the accepted benchmark value of 0.70 required for adequate internal consistency, revealing internal consistency coefficients of the survey was very satisfactory for for educational and psychological testing.[24]

The mean, standard deviation and quartile points of the JSE-HPS are presented in Table 1.

As shown seen in Table 2, the mean scores for each item on the JSE-HPS ranged from a low of 2.56 (for the reverse-score item "Health care providers should not allow themselves to be influenced by strong personal bonds between patients and their family members.") to a high of 6.66 (for the reverse-score item "Attention to patients' emotions is not important in patient interview"). The corrected item-total score correlations ranged from a low of 0.063 to a high of 0.537 with a median of 0.31. The highest item-total score correlation (0.537) was obtained for the item "Health care providers should try to stand in their patients' shoes when providing care to them." The lowest item-total score correlation was obtained for the item "Health care providers' understanding of their patients' feelings and the feelings of their patients' families does not influence treatment outcomes."

Construct validity

Factor analysis was used to explore the underlying construct of the scale. The appropriateness of principal components analysis in this study was assessed using the Kaiser–Meyer–Olkin (KMO) test prior to factor extraction, yielding an index of 0.721, suggesting the adequacy of data for factor analysis. The result for Bartlett's test of sphericity was $\chi_{(190)}$ =1110.4 and was highly significant (p <0.01), showing the intercorrelation matrix was factorable.

Six factors emerged with eigenvalues of 4.0,1.9,1.7,1.5,1.2,1.1, respectively. Based on the plot of the eigenvalues that leveled off after the 3rd factor, a 3-factor solution was selected. Summary results of factor analysis (principal component factor extraction with varimax rotation) of data for the 20 items of the JSE-HPS are shown in Tab. 2. The first three extracted factors accounting for a total of 37.9% of the explained variance. Factor 1, which accounted for 19.9% of the variance, is a major component and similar to the grand factor labeled "perspective taking" (21% of the variance) in Hojat's original study[23] based on the content of the nine items with factor coefficients greater than 0.40. Factor 2, which accounted for 9.3% of the variance, consisted of ten items with factor coefficients greater than 0.35 and was similar to the second factor named "compassionate care" (8% of the variance) in Hojat's study. One item "Health care providers should try to stand in their patients' shoes when providing care to them" was bifactorial with substantial coefficients on

Table 1: Descriptive statistics for JSE-HPS (N=263)

Statistics	Value
Score, Mean (SD)	112.58(11.64)
25th Percentile Score	107.00
50th Percentile (Median) Score	114.00
75th Percentile Score	120.00
Possible Score Range	20-140
Actual Score Range	65-137

Table 2: Summary of scores and factor analysis of JSE-HPS administered to 263 Chinese pharmacy undergraduates

Item	Scores Mean (SD)	Corrected item-total score correlation	Rotated Factor Coefficients		
			Factor 1	Factor 2	Factor 3
[17] Health care providers should try to think like their patients in order to render better care.	5.29(1.78)	.372	.657	-.022	-.137
[14] I believe that emotion has no place in the treatment of medical illness.	6.34(1.46)	.350	.602	.087	-.018
[20] I believe that empathy is an important factor in patients' treatment.	5.90(1.49)	.301	.588	-.003	-.304
[13] Health care providers should try to understand what is going on in their patients' minds by paying attention to their non-verbal cues and body language.	6.00(1.53)	.413	.567	.210	-.197
[16] Health care providers' understanding of the emotional status of their patients, as well as that of their families is one important component of the health care provider – patient relationship.	5.98(1.30)	.469	.538	.256	.144
[18] Health care providers should not allow themselves to be influenced by strong personal bonds between patients and their family members.	2.56(1.82)	.136	.518	-.397	.330
[19] I do not enjoy reading non-medical literature or the arts.	5.37(1.74)	.392	.493	.100	.267
[15] Empathy is a therapeutic skill without which a health care providers' success is limited.	4.25(1.87)	.367	.466	.127	.187
[9] Health care providers should try to stand in their patients' shoes when providing care to them.	6.33(1.19)	.537	.401	.504	.135
[11] Patients' illnesses can be cured only by targeted treatment; therefore, health care providers' emotional ties with their patients do not have a significant influence in treatment outcomes.	5.91(1.54)	.466	.324	.550	.168
[4] Understanding body language is as important as verbal communication in health care provider-patient relationships.	6.15(1.40)	.123	-.066	.550	-.395
[7] Attention to patients' emotions is not important in patient interview.	6.66(0.82)	.315	.073	.533	.310
[5] A health care provider's sense of humor contributes to a better clinical outcome.	5.81(1.51)	.200	.020	.503	.021
[12] Asking patients about what is happening in their personal lives is not helpful in understanding their physical complaints.	6.34(1.33)	.512	.387	.494	.345
[10] Patients value a health care provider's understanding of their feelings which is therapeutic in its own right.	5.80(1.37)	.415	.326	.480	.123
[8] Attentiveness of patients' personal experiences does not influence treatment outcomes.	6.02(1.37)	.320	.190	.458	.010
[2] Patients feel better when their health care providers understand their feelings.	6.58(0.93)	.122	-.026	.374	-.057
[1] Health care providers' understanding of their patients' feelings and the feelings of their patients' families does not influence treatment outcomes.	5.70(1.90)	.063	-.032	.353	-.338
[3] It is difficult for a health care provider to view things from patients' perspectives.	4.91(1.94)	.125	-.110	.121	.677
[6] Because people are different, it is difficult to see things from patients' perspectives.	4.69(2.06)	.196	.039	.064	.673
Eigen value	-	-	4.0	1.9	1.7
Percentage of variance	-	-	19.9%	9.3%	8.7%

Table 3: Favorite implementation model of humanistic education among pharmacy undergraduate students.*

Statement	Academic year	Total No. (%)	Male No. (%)	Female No. (%)	p value
Humanistic education should be infiltrated and integrated within the existing professional curriculum.	1st year	37(55.2)	14(50.0)	23(59.0)	.466
	2nd year	34(59.6)	10(47.6)	24(66.7)	.157
	3rd year	36(50.7)	10(50.0)	26(51.0)	.941
	4th year	41(60.3)	14(60.9)	27(60.0)	.945
Extracurricular forum or electives on pharmacists' humanities, such as geriatric electives, organized by professional teachers.	1st year	8(11.9)	6(21.4)	2(5.1)	.042
	2nd year	9(15.8)	5(23.8)	4(11.1)	.205
	3rd year	19(26.8)	5(25.0)	14(27.5)	.617
	4th year	16(23.5)	3(13.0)	13(28.9)	.145
Extracurricular activity on pharmacy humanistic education, such as academic lecture delivered by domestic and foreign well-known pharmacy experts, discussion about focused social news on drug safety.	1st year	48(71.6)	17(60.7)	31(79.5)	.093
	2nd year	39(68.4)	16(76.2)	23(63.9)	.335
	3rd year	50(70.4)	13(65.0)	37(72.5)	.531
	4th year	49(72.1)	18(78.3)	31(68.9)	.415
Simulation games that improve pharmacy students' empathy toward different patient populations (such as the aged, pregnant woman and children).	1st year	17(25.4)	9(32.1)	8(20.5)	.281
	2nd year	12(21.1)	6(28.6)	6(16.7)	.288
	3rd year	24(33.8)	10(50.0)	14(27.5)	.071
	4th year	15(22.1)	6(26.1)	9(20.0)	.567
Reading activity organized by class or grade level (such as biographies of famous pharmacy experts).	1st year	14(20.9)	4(14.3)	10(25.6)	.259
	2nd year	12(21.1)	6(28.6)	6(16.7)	.288
	3rd year	21(29.6)	8(40.0)	13(25.5)	.228
	4th year	16(23.5)	6(26.1)	10(22.2)	.722
Club activities at the university such as speech contest, contest for knowledge, debate contest on social hot topics concerned with pharmacy.	1st year	37(55.2)	15(53.6)	22(56.4)	.818
	2nd year	31(54.4)	10(47.6)	21(58.3)	.433
	3rd year	27(38.0)	6(26.1)	21(41.2)	.383
	4th year	34(50.0)	14(60.9)	20(44.4)	.200
Social activities, for example, students go into the community and participate in public welfare activities.	1st year	51(76.1)	19(67.9)	32(82.1)	.179
	2nd year	39(68.4)	13(61.9)	26(72.2)	.419
	3rd year	45(63.4)	11(55.0)	34(66.7)	.359
	4th year	52(76.5)	18(78.3)	34(75.6)	.804
Building campus cultural environment through web-based interventions.					
	1st year	7(10.4)	3(10.7)	4(10.3)	.952
	2nd year	5(8.8)	1(4.8)	4(11.1)	.414
	3rd year	14(19.7)	5(25.0)	9(17.6)	.484
	4th year	7(10.3)	2(8.7)	5(11.1)	.756

*Multiple responses no more than 4 were permitted, percentages do not add to 100%. Items are listed by the order of magnitude of the factor coefficients within each factor. P value for gender difference by Chi-square test.

both above factors. Factors 3 were similar to "ability to stand in patients' shoes" (7% of the variance) in Hojat's study, accounted for 8.7% of the variance and consisted of two items.

Group comparisons

As shown in Appendix, the differences in gender, age and career preference were all not statistically significant. However, we found by conducting multiple comparisons that the mean empathy score for 4th-year students (mean =117.59) was significantly higher than for any of the previous years (p <0 .01). There were no significant differences between the previous classes. And the second year students had the lowest empathy scores (mean = 108.20).

Favorite implementation model of humanistic education

Table 3 illustrated the participants' favorite implementation model of humanistic education among pharmacy undergraduate student. Of 8 models presented, the three most popular were "Social activities" (71.1%), "Extracurricular activity on pharmacy humanistic education" (70.7%), and "Humanistic education should be infiltrated and integrated within the existing professional curriculum" (56.3%), which is largely consistent

among students in different grades. In assessing for gender differences, we compared the response of students in favoring implementation model of humanistic education between males and females. However, no statistically significant gender differences were elucidated except the strong male preference for "Extracurricular forum or electives on pharmacists' humanities organized by professional teachers, such as geriatric electives" was found in the freshmen ($p<0.05$).

DISCUSSION

As acknowledged in many standards for pharmacy education, empathy is a desirable quality that should be demonstrated in all practice experiences as part of professionalism.[19,20] JSE-HPS has long been recognised as a validated instrument for empathy studies in pharmacy education, and was believed appropriate for the assessment of educational outcomes of different programs to enhance empathy and research on correlates of empathy in pharmacy education and practice.[9] The original Jefferson Scale of Physician Empathy (JSPE) developed nearly a decade ago has been widely used to measure empathy in physicians and medical students around the world, including a recent report on Chinese medical students.[20] However, JSE-HPS revised from the original JSPE was first used in a study of undergraduate nursing students in 2011,[25] which provided support for the validity and reliability of JSE-HPS. Then, similar results were found in a reseach on 613 Taiwanese nursing students[26] using a Chinese version of JSE-HPS, demonstrating the satisfactory psychometric properties of this instrument to measure empathy of undergraduate nursing students. Moreover, as a standardized method to score the degree of empathy, JSE-HPS allow for comparisons of empathy score for students from different shools or areas. Two researches have been reported about the measurement properties of the JSE-HPS among pharmacy students.[9] firstly examined the validity and reliability of the JSE-HPS in 187 first-year pharmacy students at Midwestern University Chicago College of Pharmacy.[19] then showed that scores on the empathy scale were positively associated with JSE-HPS scores in 158 American pharmacy students. In this study, we provide evidence in support of reliability and construct validity of JSE-HPS for assessing empathy among Chinese pharmacy students.

Cronbach's alpha coefficient in this study (0.81) was similar to those reported for American pharmacy students (0.80-0.84),[9,19] indicating that the JSE-HPS is internally consistent in Chinese pharmacy students. Factor analysis in Chinese pharmacy students showed a three-factor solution that was somewhat similar to the pattern that emerged from Hojat's original study[23] using the original JSPE on physicians. Essentially, "perspective taking" ,"compassion" and "ability to stand in patients' shoes" have been described as the core ingredients of empathy.[27] The consistency of these underlying factors with the conceptual framework of empathy and replicability of major factors emerged in this study provide support for the construct validity of JSE-HPS for Chinese pharmacy students. However, the third factor "ability to stand in patients' shoes" did not emerge among American pharmacy students,[9] indicating that the three constructs of "perspective taking", "compassionate care" and "ability to stand in patients' shoes" represent three separate dimensions of empathy in Chinese culture, which may be a little different from American culture. Eastern and Western cultural differences may also contribute to the difference in scores. Most eastern patients prefer their professional health providers to be objective, calm and unemotional,[27] which as particularly reflected by the item with the lowest JSE-HPS score in our study - "Health care providers should not allow themselves to be influenced by strong personal bonds between patients and their family members."

Our finding showed that the mean score for Chinese pharmacy students (112.58) was slightly higher than that was reported for American students (110.7).[9] Except the potential cross-cultural differences in social norms, religious beliefs, pedagogical methods and so on, which can influence empathic engagement,[28] importantly, a possible reason is that our samples involved pharmacy undergraduates from four academic year levels while only the 1st-year students participanted in the research for American students. In our study, the 4th-year class instead of the 1st-year one had the highest empathy scores, however, the difference of empathy scores in age was not significant, which might because the seniors have completed all their professional courses and the clinical practice. In China, because pharmacy students are separated from the clinical environment during their first three years, students only rarely encounter clinical role models until their final year of training. During their fourth-year clinical clerkships, students begin working with patients, receiving training in ethics, practice management, and management and treatment of fearful patients, therefore, may come to realize deeply and vividly the importance of the relationship between pharmacists and patients. It was also believed that pharmacy students would grow to become more empathetic, sensitive and understanding of an underserved patient after "walking in a patient's shoes".[22] Whereas, the lower JSE-HPS scores for 1st through 3rd year students can be explained with lack of the experience of interaction with patients and thus less of contemplation for

the pharmacist–patient relationship. Hence, this result suggested the insufficient of humanistic education in the foundations courses for Chinese pharmacy major. It would be valuable for undergraduates to early interview actual patients with their assigned psychosocial challenges in order for each student to acquire a more in-depth understanding of a patient's way of life.

It is generally believed that there is difference in empathy scores between different genders. Females were reported significantly more empathic than males. This difference was usually explained with intrinsic factors (e.g. evolutionary-biological gender characteristics) and extrinsic factors (e.g. styles in interpersonal care, socialization, and gender role expectations).[9,20] Unexpectedly, this study did not show evidence of pronounced male-female difference in empathy scores, together with the results about the favorite implementation model of humanistic education, hinting that the impact of gender on empathy in China is gradually decreasing, which possible due to the economic development over the past decades resulting in increase of female social status and the change in gender role expectations in China.

Strengthening and integrating humanities into professional education was widely believed contribute to increase in empathy, professionalism, and self-care[29-31] and to provide mechanisms for enhanced educatee well-being.[32] The implementation models of humanistic education are diversiform, and have been widely used in medical education. For example, stories, film, drama, and art used in medical education have been demonstrated enhance empathy, perspective-taking, openness to "otherness," and to stimulate reflection on self, others, and the world.[33] A brief literature-based course can contribute to appreciation for the value of humanities and greater student empathy.[34]A humanities-based curriculum consisting of readings linked to clinical vignettes, comments about humanities reading in required clinical Subjective, Objective, Assessment, Plan (SOAP) notes, and either station-specific or general poetry accompanying student end-of-clerkship objective structured clinical examinations was implemented in the teaching of family medicine curricular venues.[35] Learning from these experiences, we provide some implementation model of humanistic education for Chinese pharmacy undergraduates to find out suitable model for future humanistic education aiming at enhancement of empathy. The results showed that Chinese pharmacy undergraduates may have an affinity for implementing humanistic education in a vivid and free way, such as interesting social and extracurricular activity. But forum, electives or reading activity appear relatively passive and make students feel limited, thus were less favored. Futhermore, 56.3% of students showed interest in the model "Humanistic education should be infiltrated and integrated within the existing professional curriculum", which further highlighted the need to incorporate specific empathy training into mordern pharmacy curricula, however, provided new challenges to Chinese pharmacy curriculum reform. And current curriculum must be modified and made more clinically and socially relevant for the humanities to be integrated into pharmacy education, which educators should pay more attention to.

Limitation of this work was mainly that participants in this survey came from the single Chinese university, so our results possibly can not represent those of all Chinese pharmacy students. A replication of the study with a larger sample of Chinese pharmacy students from multiple institutions can strengthen our findings.

Based on our data, we summarized some recommendations on Chinese humanistic education centered on empathy in pharmacy teaching for successful practice:

Chinese educators should begin construct guidelines focusing on the need to incorporate, promote and instil empathy into pharmacy students in order to better prepare them for future healthcare practice.

Humanistic education in the foundations courses for 1st to 3rd academic year pharmacy students need to be focus on. Pedagogical innovation designed for early exposure to clinical training, for example, embodying some practical or simulated experience of interaction with patients that encourage empathetic responses, may be of great value in this academic stage.

Humanistic education that promotes empathy has to be integrated within the existing training programs for pharmacy undergraduate students, thus professional teachers need to fully prepare for classroom teaching. And more clinically and socially relevant content for the humanities should been integrated into the professional knowledge.

Implementing humanistic education in a vivid and free way, such as interesting social and extracurricular activity, to supplement the classroom teaching.

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CONFLICTS OF INTEREST

There is no conflict of interest for the present communication.

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Appendix

Appendix: Group comparison scores of the Jefferson scale of Chinese pharmacy undergraduate empathy.				
Group	**Number**	**Mean**	**SD**	**p**
Gender				
Male	92	112.49	13.61	.461
Female	171	112.64	10.47	-
Age				
≥21 years old	162	112.85	12.88	.318
<21 years old	101	112.15	9.35	-
Career preference				
Professional pharmacist	79	111.90	11.99	.266
others	184	112.88	11.51	-
Academic year				
1st year	67	113.90	8.21	-
2nd year	57	108.20	12.69	-
3rd year	71	110.00	12.86	-
4th year	68	117.59	10.30	<.01