

RESEARCH ARTICLE

Assessment of empathy levels among pharmacy students in Mongolia using the Jefferson Scale of Empathy (JSE-HPS): A cross-sectional study

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Abstract

Background: Empathy is an essential component of patient-centred healthcare and a key professional attribute for pharmacists. However, evidence regarding empathy among pharmacy students in Mongolia remains limited. This study aimed to assess empathy levels among pharmacy students and examine differences across demographic and educational characteristics. **Methods:** A cross-sectional quantitative study was conducted among 145 final-year students enrolled in the Pharmacist (5-year), Pharmacist (3+3), and Pharmacy Technician programmes at the Mongolian National University of Medical Sciences. Empathy was assessed using the Jefferson Scale of Empathy–Health Professions Students version (JSE-HPS). Data were analysed using descriptive statistics, independent-samples t-tests, and one-way ANOVA. **Results:** The overall mean empathy score was 86.2 ± 11.9 (range: 63–123). No significant differences in overall empathy scores were observed according to gender ($p = 0.235$), age group ($p = 0.131$), marital status ($p = 0.067$), or programme type ($p = 0.632$). However, empathy scores differed significantly according to place of residence ($p = 0.045$). **Conclusion:** This study provides the first evidence on empathy among pharmacy students in Mongolia using the Jefferson Scale of Empathy–Health Professions Students version (JSE-HPS). The findings support the integration of educational strategies to strengthen empathy-focused and patient-centred pharmaceutical care. Further multi-institutional and longitudinal studies are recommended.

Introduction

Empathy is a fundamental component of patient-centred healthcare as well as a crucial professional attribute for pharmacists. It enables healthcare providers to understand patients' emotions, perspectives, and needs, thus improving therapeutic relationships and health outcomes. In pharmacy education, empathy contributes not only to effective communication but also to the development of an ethical and compassionate professional identity.

Recent studies have emphasised that empathy enhances communication, promotes patient adherence, and increases overall satisfaction in pharmacy practice (Ahmad *et al.*, 2024). Moreover, empathy has been described as a predictor of clinical

effectiveness and moral reasoning, and as central to the identity of healthcare professionals (Deniz *et al.*, 2024). Educational research highlights the importance of embedding empathy-focused learning strategies such as simulation-based role-play, reflective exercises, and service learning to foster both cognitive and affective empathy among pharmacy students (Lumish *et al.*, 2022). A 2023 systematic review further indicated that empathy development among pharmacy students is influenced by multiple factors, including gender, educational environment, and cultural context (Pratiwi *et al.*, 2023).

Most studies on empathy have been conducted in Western and Southeast Asian countries (Williams *et al.*, 2020). In contrast, empirical evidence regarding empathy among pharmacy students in Mongolia

remains scarce. In Mongolia, pharmacy education has undergone substantial development in response to healthcare system reforms and an increasing emphasis on competency-based education. The School of Pharmacy at the Mongolian National University of Medical Sciences (MNUMS) currently offers three pharmacy education pathways: a five-year Pharmacist programme, a Pharmacist (3+3) pathway in which pharmacy technician graduates continue an additional three years of study to obtain a pharmacist qualification, and a three-year Pharmacy Technician programme (Dorj *et al.*, 2018; Sodnomtseren *et al.*, 2022). Recent curriculum revisions have increasingly emphasised clinical pharmacy, pharmaceutical care, communication skills, and patient-centred practice (Sodnomtseren *et al.*, 2022). Although empathy is not currently taught as a standalone subject within the pharmacy curriculum in Mongolia, empathy-related competencies may be indirectly addressed through courses and training activities focused on communication skills, clinical pharmacy, patient counselling, and patient-centred pharmaceutical care. These competencies are primarily developed through classroom instruction, practical training, and patient-centred learning activities.

In Mongolia, pharmacy practice is gradually transitioning from product-oriented services toward patient-centred pharmaceutical care in line with healthcare reforms and competency-based professional education (Sodnomtseren *et al.*, 2022). In this context, empathy may play an important role in strengthening pharmacist-patient communication and improving the quality of pharmaceutical services.

However, empirical research examining the affective dimensions of pharmacy education—particularly empathy and its role in patient communication and patient-centred pharmaceutical care—remains scarce in Mongolia.

Therefore, this study aimed to assess empathy levels among pharmacy students in Mongolia and examine differences across demographic and educational characteristics, thereby providing context-specific evidence to support future curriculum enhancement and professional training.

Methods

The study employed a cross-sectional quantitative design among final-year pharmacy students at the School of Pharmacy, Mongolian National University of Medical Sciences (MNUMS). At the time of the study, a total of 185 students were enrolled in the final year of

the Pharmacist (5-year), Pharmacist (3+3), and Pharmacy Technician programmes. All eligible final-year students were invited to participate in the study during classroom sessions. A total of 145 students completed the questionnaire, yielding a response rate of 78.4%. Data were collected using printed self-administered questionnaires distributed during classroom sessions. Participants completed the questionnaires anonymously in the presence of the researchers, and the completed questionnaires were collected immediately after completion. To minimise response bias and social desirability bias, participants were informed that their responses would remain confidential, no identifying information would be collected, and that participation or non-participation would not affect their academic evaluation or standing. All returned questionnaires were reviewed for completeness, and all questionnaires were fully completed and included in the final analysis.

The JSE-HPS (Hojat *et al.*, 2001) was officially licensed from Thomas Jefferson University. The questionnaire was translated into Mongolian through a structured translation and adaptation process following the recommendations of Thomas Jefferson University. The translated version was reviewed by pharmacy faculty members with expertise in pharmacy education and research to ensure conceptual equivalence, linguistic clarity, and contextual appropriateness. The questionnaire was subsequently evaluated by 15 independent individuals to assess comprehensibility and readability, and minor wording modifications were made where necessary. The final Mongolian version was submitted to Thomas Jefferson University and formally approved for use in this study. The Mongolian version of the JSE-HPS is maintained by the Jefferson Scale of Empathy research team and is available to researchers upon request through the Jefferson Scale of Empathy programme.

The JSE-HPS consists of 20 items rated on a 7-point Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree). The total score ranges from 20 to 140, with higher scores indicating greater empathy levels.

The collected data were coded and analysed using SPSS version 26.0. Descriptive statistics, independent-samples *t*-tests, and one-way analysis of variance (ANOVA) were performed. Independent-samples *t*-tests were used to compare empathy scores according to gender, while one-way ANOVA was used to compare empathy scores across age groups, marital status, place of residence, and programme type. When one-way ANOVA indicated statistically significant differences, post-hoc pairwise comparisons were performed using Tukey's honestly significant difference (HSD) test.

The internal consistency reliability of the questionnaire was evaluated using Cronbach’s alpha coefficient, which was 0.876, indicating good internal consistency.

This study received ethical approval from the Institutional Review Board of the Mongolian National University of Medical Sciences (Meeting No. 2023/3-04). All participants were fully informed about the purpose of the study and provided written informed consent prior to participation.

Results

A total of 145 final-year pharmacy students from the MNUMS participated in the study. Empathy levels were assessed using the JSE-HPS. As shown in Table I, the

overall mean empathy score among participants was 86.2 ± 11.9 (range: 63–123). No statistically significant differences in overall empathy scores were observed according to gender ($p = 0.235$), age group ($p = 0.131$), marital status ($p = 0.067$), or programme type ($p = 0.632$). However, empathy scores differed significantly according to place of residence ($p = 0.045$). Post-hoc Tukey HSD analysis showed that students residing in the city had significantly higher empathy scores than those residing in soum centres (mean difference = 7.74, $p = 0.028$), whereas no significant differences were observed between the other residence groups. Male students had a higher mean empathy score than female students (90.1 ± 14.5 vs. 85.8 ± 11.7); however, this difference was not statistically significant ($p = 0.235$). The larger standard deviation among male students indicates greater variability in empathy scores within this group.

Table I: Empathy Scores by Demographic Variables (n = 145)

Variable	n	Mean ± SD	p-value
Gender			
Female	133	85.8 ± 11.7	0.235
Male	12	90.1 ± 14.5	
Age group			
<25 years	109	85.2 ± 11.4	0.131
25–30 years	22	87.1 ± 12.6	
>30 years	14	91.9 ± 13.6	
Marital status			
Single	87	85.0 ± 11.2	0.067
Married	43	89.6 ± 12.1	
Other	15	83.1 ± 14.2	
Residence			
Provincial center	59	86.3 ± 12.7	0.045
Remote area	6	88.7 ± 8.0	
Soum center	28	80.8 ± 9.9	
City	52	88.6 ± 11.8	
Programmetype			
Pharmacist (5 year)	80	87.0 ± 11.6	0.632
Pharmacist (3+3)	25	84.9 ± 9.8	
Pharmacy technician	40	85.3 ± 13.7	

Note: Independent samples t-test was used for gender comparisons, while one-way ANOVA was used for age group, marital status, residence, and programme type comparisons.

Discussion

This study assessed empathy levels among final-year pharmacy students at the School of Pharmacy, MNUMS, using the JSE-HPS. The overall mean empathy score was 86.2 ± 11.9 . These findings are consistent with previous

studies reporting comparable empathy scores among pharmacy students and support the importance of empathy as a key component of effective pharmacist–patient interactions and quality pharmaceutical care (Ahmad et al., 2024).

Although no statistically significant gender differences were observed in overall empathy scores, previous studies have reported that female pharmacy students often demonstrate higher empathy than male students, particularly in perspective-taking and understanding patients' experiences (Pratiwi *et al.*, 2023). In the present study, however, overall empathy scores did not differ significantly according to gender.

No statistically significant differences in overall empathy scores were identified according to age or programme type. However, empathy scores differed significantly according to place of residence. Similar findings have been reported among pharmacy students in other educational settings, suggesting that empathy may not be consistently associated with specific demographic characteristics (Williams *et al.*, 2020). Furthermore, evidence from a recent systematic review indicates that the influence of demographic and educational factors on empathy varies considerably across studies, highlighting the complex and multifactorial nature of empathy development (Pratiwi *et al.*, 2023). The reasons underlying the observed differences according to place of residence remain unclear and should be explored in future studies involving larger and more diverse student populations.

The findings also highlight the importance of incorporating educational strategies that promote empathy development within pharmacy curricula. Previous studies have shown that service-learning activities, simulation-based learning, and patient-narrative approaches can enhance empathy by strengthening students' understanding of patients' experiences and perspectives (Lumish *et al.*, 2022; Deniz *et al.*, 2024). Integrating these approaches into pharmacy education may therefore provide valuable opportunities to foster empathic and patient-centred pharmaceutical care among future pharmacists.

Overall, the present study provides baseline evidence regarding empathy among pharmacy students in Mongolia. These findings contribute to the growing body of evidence supporting the importance of empathy in pharmacy education and provide a foundation for future research and curriculum development in Mongolia.

Limitations

Several limitations should be considered when interpreting the findings of this study. First, the study was conducted among 145 final-year pharmacy students from a single institution, the School of Pharmacy at the MNUMS. Therefore, the findings may not be generalisable to pharmacy students from other universities or educational settings in Mongolia.

Second, empathy was measured using a single self-report instrument (JSE-HPS). Although the JSE-HPS is a widely used and validated tool, self-reported measures may be influenced by social desirability and response bias, potentially affecting the accuracy of the reported empathy levels.

Third, the cross-sectional design limits the ability to examine changes in empathy over time or to establish causal relationships between educational experiences and empathy development. Consequently, the findings provide only a snapshot of empathy levels at a single point in time.

In addition, the study did not evaluate empathy before and after specific educational interventions. Therefore, the effectiveness of empathy-enhancing educational strategies could not be assessed. Finally, potentially relevant factors such as personality traits, psychological well-being, academic stress, self-efficacy, and prior patient-care experiences were not examined and may have contributed to explaining variations in empathy scores. The relatively small number of male participants may have limited the statistical power of gender-based comparisons.

Future studies involving multiple institutions, longitudinal designs, and a broader range of influencing factors are recommended to provide a more comprehensive understanding of empathy development among pharmacy students in Mongolia.

Conclusion

This study provides baseline evidence regarding empathy among pharmacy students in Mongolia using the JSE-HPS. The findings support the importance of incorporating empathy-focused educational strategies within pharmacy curricula to strengthen patient-centred pharmaceutical care. Further multi-institutional and longitudinal studies are recommended to advance understanding of empathy development among pharmacy students in Mongolia.

Conflict of interest

The authors declare no conflict of interest.

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