

Effects of depression and anxiety on empathic communication skills in medical students

Yuzo Nakamura[1], Akiko Koyama[1], Takeaki Takeuchi[1], Masahiro Hashizume[1]

Corresponding author: Dr Yuzo Nakamura yuuzou.nakamura@med.toho-u.ac.jp

Institution: 1. Department of Psychosomatic Medicine, Toho University School of Medicine

Categories: Students/Trainees, Clinical Skills, Simulation and Virtual Reality

Received: 24/06/2020

Published: 09/10/2020

Abstract

Background

Doctors require empathic communication skills for the psychological needs of patients. However, it is not clear how much this is affected by the mental health of medical students and their clinical practical training.

Aim

This study's aim was to measure the empathic communication of medical students using the JSE-S (Jefferson Scale of Physician Empathy, Student version). The factors affecting this were also examined.

Methods

We offered students either a hospitalization or outpatient case and handed out questionnaires to 141 medical students for clinical practical training, receiving answers from 126.

Results

The average JSE-S score among all students after the practical training was significantly improved. Students who chose the hospitalization case showed a significant improvement after the practical training, while those who chose the outpatient case showed no improvement. Students who showed tendencies of depression and anxiety improved their JSE-S score less than students who did not. Students improved in their skills the most when they had a medical interview with three patients.

Conclusion

Depression and anxiety may impede empathic communication ability. Students may need to have medical interviews with an appropriate number of patients for a certain amount of time in order to improve these skills.

Keywords: Empathy; the JSE (Jefferson Scale of Physician Empathy); medical students

Introduction

Empathy is defined as ‘feeling or understanding the emotions and mental states experienced by others in exactly the same way.’ This ability of empathic communication is established only through interactions with others, and it is thought that it should be nurtured and acquired in social life from an early age (Umeda *et al.*, 2014). It is no exaggeration to say that empathy is an indispensable ability for having a successful social life. Of course, this is even more necessary for doctors who treat those suffering from illness. Empathic communication skills in the medical practice promote not only the formation of rapport with patients, but also the ability to understand patients’ illnesses, create opportunities for treatment, and to correctly approach patients who suffer from anxiety and fear (Ring *et al.*, 2005; Pedersen, 2010). However, the formation of this empathic communication skill remains unclear. It is clear that it can be nurtured from early childhood, but it is not clear whether skills that are already formed in early childhood can be flexibly changed, modified, or improved.

The importance of empathic communication has been pointed out since the early 20th century (Peabody, 1990). In the United States, empathy is regarded as an important factor in increasing patient satisfaction (Novack, Epstein and Paulsen, 1999; Hojat *et al.*, 2001; Halpern, 2003). In 2001, the JSE-S (Jefferson Scale of Physician Empathy, Student version) was developed to measure empathic communication skills (Hojat *et al.*, 2002). This scale has been translated into various languages and is used not only by medical students but also for investigating physicians’ empathic communication skills (Suh *et al.*, 2012; Costa *et al.*, 2014; Sng *et al.*, 2016; Damiano *et al.*, 2017). In Japan, the importance of empathy among medical students was pointed out in the 1980s (Ikemi and Masui, 1984; Nagata and Murayama, 1987), and the JSE began being translated into Japanese in 2009. This was a result of a currently existing objective measure of empathic communication ability (Kataoka *et al.*, 2009; Abe *et al.*, 2018).

Although various studies have been conducted to scrutinize the current understanding of empathic communication ability, few studies have examined how the ability improves and what factors affect its improvement. Hence, this study measured the empathic communication ability of current medical students and examined the factors affecting it.

Methods

Procedures

This was an observational study of 141 5th grade medical students (90 male students and 51 female students). They conducted clinical practical training for one week at Toho University Medical Center, Omori Hospital, from October 2017 to January 2019.

Table 1. The schedule of the clinical training

	9:00-12:00	14:00-15:30	15:30-17:00
Monday	Orientation of Clinical training Observing and Interviewing outpatients	Lecture of psychosomatic medicine	Interviewing in charge of inpatients (students not in charge of inpatients are free time)

Tuesday	Observing and Interviewing outpatients	Lecture of psychosomatic medicine	Interviewing in charge of inpatients (students not in charge of inpatients are free time)
Wednesday	Observing and Interviewing outpatients	Conference of inpatients case	Interviewing in charge of inpatients (students not in charge of inpatients are free time)
Thursday	Observing and Interviewing outpatients	Lecture of psychosomatic medicine	Interviewing in charge of inpatients (students not in charge of inpatients are free time)
Friday	Observing and Interviewing outpatients	Professor's Summary and Oral Advisory	

Table 1 shows the contents of the practical training. Students practiced in groups of 3 or 4 people, and the duration of the practical training was 8 hours per day from Monday to Friday, 5 days in total. The basic contents of the training consisted of two types of cases: a first visit patient in the outpatient section and one case of an inpatient. On the last day of the practical training, the students participated in an oral examination on an inpatient case. However, if the student was not in charge of an inpatient case due to an insufficient number of hospitalized patients, an oral examination was conducted in the case of an outpatient first visit patient who had a medical interview. This was naturally affected by the number of hospitalized cases at that time. In the group, students voluntarily decided to discuss whether the oral examination would be conducted with an inpatient case or a first visit outpatient case. This difference was also added to the analysis.

Table 2. Basic data for each student case

	male students		female students		F	P value
	inpatient case(N=65)	outpatient case(N=14)	inpatient case(N=33)	outpatient case(N=14)		
	Mean(SD)	Mean(SD)	Mean(SD)	Mean(SD)		
age	25.0(3.1)	26.1(3.6)	23.6(2.2)	24.9(4.0)	2.8	<0.05
interview time of case patient	45.0(28.9)	25.3(13.4)	51.4(43.1)	41.4(37.1)	2.1	n.s
JSE-S score of before the training	85.5(6.3)	88.9(4.5)	86.8(6.6)	88.6(6.3)	1.9	n.s

JSE-S score of after the training	88.7(7.2)	89.9(3.8)	88.2(7.1)	89.5(8.5)	0.3	n.s
GHQ-30	6.1(4.2)	6.4(6.1)	6.6(5.3)	4.9(4.2)	0.3	n.s

Table 2 shows the details of the actual contents of the practical training and the students who were assigned to each case.

Instrument

a. Jefferson Scale of Physician Empathy, Student version (JSE-S; JSE-S Japanese version)

JSE-S is a questionnaire (Hojat *et al.* 2001) that measures the co-sensitivity of medical professionals (Abe *et al.* 2012). The Japanese version was used. The original JSE-S consisted of 20 items answered on a 7-point Likert scale (1 = strongly disagree, 7 = strongly agree). However, in this study, 20 items answered on a 5-point Likert scale (1 = strongly disagree, 5 = strongly agree) were used because this study aims to compare with previous studies. Students were asked to answer the JSE-S twice: before the practical training and at the end of the practical training. We calculated the amount of change in the JSE-S score from before the clinical practical training to after the practical training, and examined the improvement of the empathic communication ability.

b. GHQ-30

This is a Japanese version of the questionnaire developed by Goldberg (Nakagawa and Daibo, 1985). It consists of six sub-items: 'general illness tendency,' 'physical symptoms,' 'sleep disorder,' 'social activity disorder,' 'anxiety and mood modulation,' and 'depression and suicidal behavior.' The original GHQ is 60 items answered on a 4-point Likert scale (0 = not at all, 3 = very well). In this study, 30 items were answered on a 4-point Likert scale used in workplace health management, and the scoring was set to the 2-point Likert scale (0 = negative, 1 = positive) of the GHQ method. GHQ-30 was completed before the start of orientation and collected at the end of the practical training.

Data analysis

We performed t-tests by gender, age, and form of practice, using changes in the JSE-S score obtained before and after the practical training. After that, we divided the students using GHQ-30 into those who were depressed or uneasy and those who were not, and we performed a t-test for the amount of change in JSE score. Finally, we conducted a one-way ANOVA of the number of patients who had a medical interview. We used SPSS version 24 for the analysis.

Results/Analysis

Results

All three questionnaires were voluntarily submitted at the end of the practical training. The proportion of valid responses was 89.4%.

Cronbach's JSE-S score was $\alpha = 0.80$ (before the practical training) and $\alpha = 0.83$ (after the practical training). The

correlation between JSE-S scores before and after the practical training was Pearson = 0.67 ($p < .01$). It was judged that there was also test-retest reliability.

The average JSE-S score of all students before the practical training was 86.1 (SD = 6.2), and the average JSE-S score after the practical training was 88.8 (SD = 7.0). These numbers indicate that the JSE-S score after the practical training was significantly improved ($t_{(125)} = -4.6$, $p < 0.0001$). Compared with the previous study (Abe *et al.* 2013), JSE-S score before the practical training was significantly higher ($t_{(337)} = -3.1$, $p < .01$).

Practice forms such as cases

The students who selected the outpatient case had a JSE-S score of 88.8 (SD = 5.4) before the practical training, and those who selected the inpatient case had a JSE-S score of 85.9 (SD = 6.4).

This was significantly higher before the practical training ($t_{(124)} = -2.2$, $p < 0.05$). However, the JSE-S score after practical training for students who selected hospitalized cases was 88.5 (SD = 7.2), indicating a significant improvement in the JSE-S score ($t_{(97)} = 5.1$, $p < 0.0001$). The JSE-S score after the practical training did not improve, at 89.7 (SD = 6.5).

Gender differences

The JSE-S score of female students before practical training was 87.3 (SD = 6.5), and the JSE-S score of male students was 86.1 (SD = 6.2) (Table 2). There was no significant difference in gender ($t_{(124)} = -1.1$, n.s.). Male students showed a significant improvement in the JSE-S score after practical training ($t_{(78)} = -4.7$, $p < 0.0001$), while female students did not ($t_{(46)} = -1.6$, ns). Only male students ($t_{(64)} = -4.7$, $p < 0.0001$) and female students ($t_{(32)} = -2.1$, $p < 0.05$) who selected hospitalized cases showed a significant improvement in the JSE score.

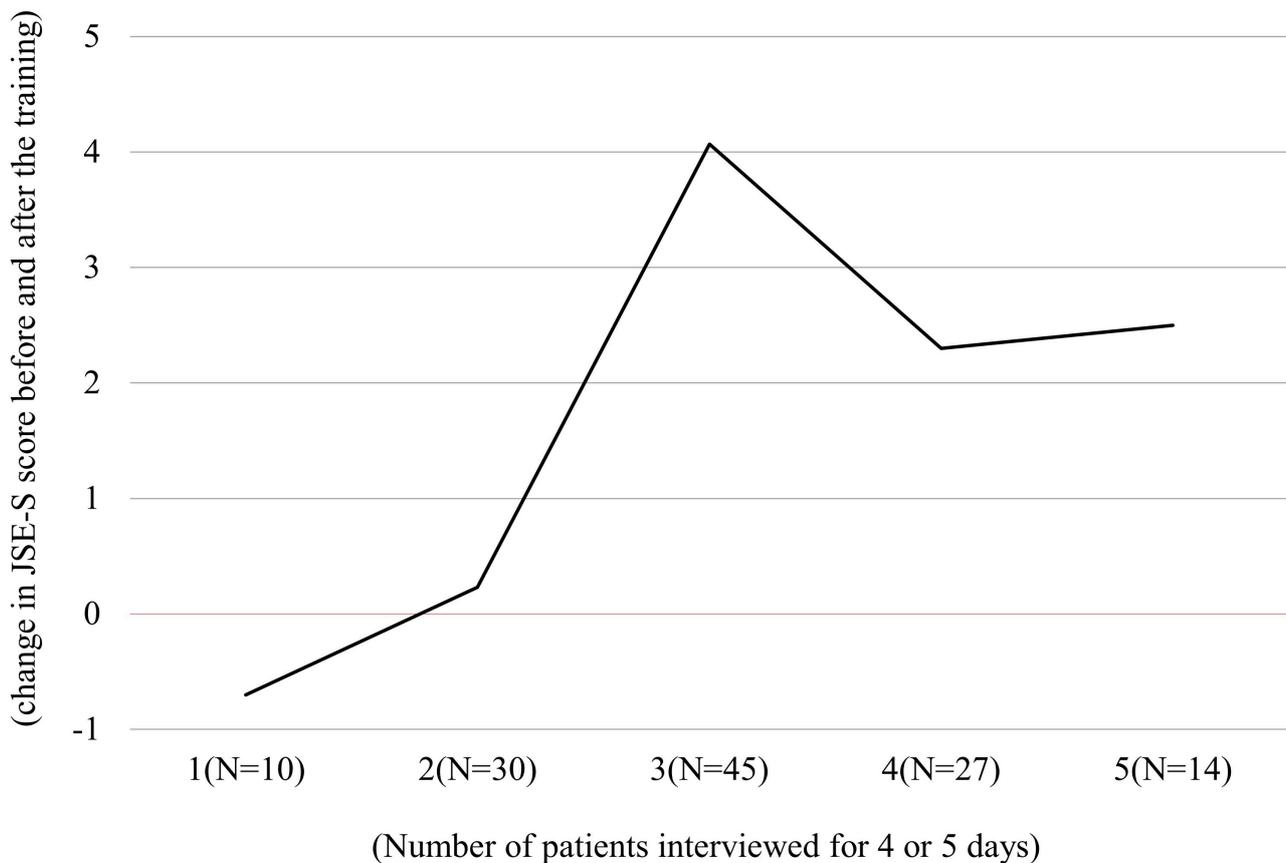
Mental health

In this study, mental health was measured to examine student factors. The mental health of the subject was 6.1 (SD = 4.7), similar to other studies (Ozaki *et al.*, 2002; Jiang *et al.*, 2003). In addition, the percentage of people meeting the cut-off or higher (total of 13 or higher) was 11 (8.7%), which was comparable to other studies. However, there were 40 students who were positive for 'E Anxiety and Mood Modulation' and 'F Fearful Depression.' Students who showed the tendencies of depression and anxiety were less likely to improve their JSE-S score than students who did not ($t_{(124)} = -1.8$, $p < 0.10$).

Number of patients who had medical interviews

The number of patients undergoing medical interviews and the amount of change in JSE-S score are shown in Figure 1.

Figure 1: Number of patients interview for 5 days and amount of change in JSE-S score



The JSE-S score improved most when a medical interview was conducted with three patients ($F_{(4,121)} = 3.3, p < 0.01$).

Discussion

First, regardless of the contents of clinical practical training and forms of practical training, the empathic communication ability significantly improved. It is speculated that empathic communication ability is most improved when medical interviews are conducted with three patients or more and when students take hospitalized cases. This is presumed to be related to an appropriate amount of time and number of people with whom students had a medical interview for 5 days.

As in the hypothesis before this study was conducted, it was thought that empathic communication ability would be improved by the interaction between conducting medical interviews with many patients and conducting long-term medical interviews with just one patient. However, in this study, it was difficult to establish empathic communication ability with large numbers of patients participating in medical interviews over the limited period of 5 days. On the other hand, however, the students may have focused on working hard to handle each case. As a result, it is speculated that this may not contribute to the understanding of empathic communication ability, because each case may not have been fully understood by the students. In practical training, students are focused on talking to patients and conscious of important information they provide while talking. Therefore, in order to improve empathic communication ability, it may be necessary for doctors to get used to speaking with patients first. This is thought to have led to a relationship between the appropriate number of outpatients participating in medical interviews and the improvement of empathic communication ability.

Whether the subject case was outpatient or hospitalized one is also a factor. In the case of hospitalized patients, an average of 47.2 minutes of medical interviews were conducted for one patient over 5 days, while in the outpatient cases, the average was 33.4 minutes for one patient per day. In the case of hospitalized cases, the medical interview was less than 10 minutes a day, but students could consider the case meticulously at home, think about what questions should be asked of the patient, and plan how to contact them. It is speculated that from this that the next day's medical interview could be conducted in a way that led to the improvement of empathic communication ability (Wüdrich *et al.*, 2017). Whether each student handled an outpatient case or an inpatient case was decided through independent discussion within a group consisting of 3 students, but students who already had high empathic communication ability even before starting practical training had a high tendency to let other students choose cases. It was inferred that students with high empathic communication ability showed this tendency because they demonstrated their ability not with patients but in the practical training group. From this point of view, it is important to create an educational program that allows students to approach medical interviews for the purpose of preventing differences in practical training content between students.

In this study, no previous gender differences were noted (Hojat *et al.*, 2018). This is because the empathic communication ability before the practical training was significantly higher than in the previous study (Abe *et al.*, 2018). It was suggested that such a result could be obtained by a substantial influence. For male students, whatever the form of practical training, the practice itself leads to the improvement of empathic communication skills, while for female students, if the contents of the practice do not have an appropriate difficulty level, the improvement of empathic communication skills is not fulfilled. However, this is just one study and the sample is insufficient in regard to this point, so further investigation is planned in the future.

Finally, this survey suggests that students with depression and anxiety tend to have difficulty in improving their empathic communication skills. This has been pointed out in other studies (Bellini, Baime and Shea, 2002; Chen, Kumar and Haramati, 2016; Damiano *et al.*, 2017). In order to make clinical practice meaningful, it is necessary to identify such students at an early stage and address these problems. In addition, since it is undeniable that the personality tendency of the students indirectly affected their mental health and their ability to communicate with empathy (Hojat *et al.*, 2015), we are planning to investigate the mental health of students as influenced by their personality tendencies in the future.

Conclusion

Depression and anxiety may impede empathic communication ability. Students may need to have medical interviews with an appropriate number of patients for a certain amount of time in order to improve these skills.

Limitations

The JSE-S used in this study was conducted on a 5-point Likert scale, corresponding to previous research. The average score therefore tended to be significantly higher than in other studies. This occurred because the 7-point Likert scale was conducted as a 5-point Likert scale. However, in the statistical analysis, the JSE-S score after the practical training was significantly improved.

Take Home Messages

- The average JSE-S score among all students after the practical training was significantly improved.
- Students who chose the hospitalization case showed a significant improvement after the practical training, while those who chose the outpatient case showed no improvement.
- Students who showed tendencies of depression and anxiety improved their JSE-S score less than students who did not. Students improved in their skills the most when they had a medical interview with three patients.
- The JSE-S score improved most when a medical interview was conducted with three patients.
- It is important to create an educational program that allows students to approach medical interviews for the purpose of preventing differences in practical training content between students.

Notes On Contributors

Yuzo Nakamura, MD is an assistant professor at the Department of Psychosomatic Medicine, Toho University School of Medicine, Tokyo, Japan.

Akiko Koyama, MD is a senior resident at the Department of Psychosomatic Medicine, Toho University School of Medicine, Tokyo, Japan.

Takeaki Takeuchi, MD, PhD is an associate professor at the Department of Psychosomatic Medicine, Toho University School of Medicine, Tokyo, Japan.

Masahiro Hashizume, MD, PhD is a professor at the Department of Psychosomatic Medicine, Toho University School of Medicine, Tokyo, Japan.

Acknowledgements

The authors thank Dr. Koyama for the acquisition of data, Dr. Takeuchi PhD and Dr. Hashizume PhD for educational advice and support.

Figure 1. Source: The Authors.

Bibliography/References

Abe, K., Wakabayashi, H., Saiki, T., Kawakami C., *et al.* (2012) 'Validity and reliability of the Japanese versions of the Trait Emotional intelligence Questionnaire-Short Form and the Jefferson Scale of Physician Empathy', *Medical Education (Japan)*, 43, pp. 351-359.

Abe, K., Niwa, M., Fujisaki, K. and Suzuki, Y. (2018) 'Associations between emotional intelligence, empathy and personality in Japanese medical students', *BMC Medical Education*, 18(1), pp. 1-9.

<https://doi.org/10.1186/s12909-018-1165-7>

Bellini, L. M., Baime, M. and Shea, J. A. (2002) 'Variation of mood and empathy during internship', *Journal of the*

American Medical Association, 287(23), pp. 3143-3146. <https://doi.org/10.1001/jama.287.23.3143>

Chen, A. K., Kumar, A. and Haramati, A. (2016) 'The effect of Mind Body Medicine course on medical student empathy: A pilot study', *Medical Education Online*, 21(1), pp. 1-4. <https://doi.org/10.3402/meo.v21.31196>

Costa, P., Alves, R., Neto, I., Marvão, P. *et al.* (2014) 'Associations between medical student empathy and personality: A multi-institutional study', *PLoS ONE*, 9(3), pp. 1-7. <https://doi.org/10.1371/journal.pone.0089254>

Damiano, R. F., de Andrade Ribeiro, L. M., dos Santos, A. G., da Silva, B. A. *et al.* (2017) 'Empathy is Associated with Meaning of Life and Mental Health Treatment but not Religiosity Among Brazilian Medical Students', *Journal of Religion and Health*. Springer US, 56(3), pp. 1003-1017. <https://doi.org/10.1007/s10943-016-0321-9>

Halpern, J. (2003) 'What is clinical empathy?', *Journal of General Internal Medicine*, 18(8), pp. 670-674. <https://doi.org/10.1046/j.1525-1497.2003.21017.x>

Hojat, M., Mangione, S., Gonnella, J. S., Nasca, T. *et al.* (2001) 'Empathy in medical education and patient care', *Academic Medicine*, 76(7), p. 669. <https://doi.org/10.1097/00001888-200107000-00001>

Hojat, M., Gonnella, J. S., Mangione, S., Nasca, T. J. *et al.* (2002) 'Empathy in medical students as related to academic performance, clinical competence and gender', *Medical Education*, 36, pp. 522-527. <https://doi.org/10.1046/j.1365-2923.2002.01234.x>

Hojat, M., Michalec, B., Veloski, J. J. and Tykocinski, M. L. (2015) 'Can empathy, other personality attributes, and level of positive social influence in medical school identify potential leaders in medicine?', *Academic Medicine*, 90(4), pp. 505-510. <https://doi.org/10.1097/ACM.0000000000000652>

Hojat, M., DeSantis, J., Shannon, S. C., Mortensen, L. H. *et al.* (2018) 'The Jefferson Scale of Empathy: a nationwide study of measurement properties, underlying components, latent variable structure, and national norms in medical students', *Advances in Health Sciences Education*. Springer Netherlands, 23(5), pp. 899-920. <https://doi.org/10.1007/s10459-018-9839-9>

Ikemi, A. and Masui, T. (1984) 'An Experiential Learning Course on Teaching Humanistic Skill to Medical Students -Effect on Empathy and Regard for Others', *Journal of UOEH (Japan)*, 6, pp. 265-271.

Jiang, N., Sato, T., Hara, T., Takedomi, Y. *et al.* (2003) 'Correlations between trait anxiety, personality and fatigue: Study based on the Temperament and Character Inventory', *Journal of Psychosomatic Research*, 55(6), pp. 493-500. [https://doi.org/10.1016/S0022-3999\(03\)00021-7](https://doi.org/10.1016/S0022-3999(03)00021-7)

Kataoka, H. U., Koide, N., Ochi, K., Hojat, M. *et al.* (2009) 'Measurement of empathy among Japanese medical students: Psychometrics and score differences by gender and level of medical education', *Academic Medicine*, 84(9), pp. 1192-1197. <https://doi.org/10.1097/ACM.0b013e3181b180d4>

Nagata, K. and Murayama, R. (1987) 'Attitude education and therapeutic ego formation', *Medical Education (Japan)*, 18, pp. 197-203.

Nakagawa, Y. and Daibo, I. (1985) *GHQ Mental Health Survey Guide (Japanese)* Nihon Bunka Kagakusha Press.

Novack, D. H., Epstein, R. M. and Paulsen, R. H. (1999) 'Toward creating physician-healers', *Academic Medicine*, 74, pp. 516-520. <https://doi.org/10.1097/00001888-199905000-00017>

Ozaki, K., Nagata, K., Hayashida, M., Ohta, Y. *et al.* (2002) '30-Item General Health Questionnaire Scores in Male and Female University Freshmen', *Acta medica Nagasakiensia (Japan)*, 47, pp. 15-22.

Peabody, F. W. (1990) 'The care of the patient', *Journal of Interprofessional Care*, 5(3-4), pp. 129-140. <https://doi.org/10.3109/13561829009043458>

Pedersen, R. (2010) 'Empathy development in medical education--a critical review.', *Medical Teacher*, 32(7), pp. 593-600. <https://doi.org/10.3109/01421590903544702>

Ring, A., Dowrick, C. F., Humphris, G. M., Davies, J. *et al.* (2005) 'The somatising effect of clinical consultation: What patients and doctors say and do not say when patients present medically unexplained physical symptoms', *Social Science and Medicine*, 61, pp. 1505-1515. <https://doi.org/10.1016/j.socscimed.2005.03.014>

Sng, G., Tung, J., Ping, Y. S., Lee, S. S. *et al.* (2016) 'Complex and novel determinants of empathy change in medical students', *Korean Journal of Medical Education*, 28(1), pp. 67-78. <https://doi.org/10.3946/kjme.2016.11>

Suh, D. H., Hong, J. S., Lee, D. H., Gonnella, J. S. *et al.* (2012) 'The Jefferson Scale of Physician Empathy: A preliminary psychometric study and group comparisons in Korean physicians', *Medical Teacher*, 34(6), e464-468 <https://doi.org/10.3109/0142159X.2012.668632>

Umeda, S., Itakura, S., Hirata, S., Endo, Y., *et al.* (2014) *The Cognitive Science of Human Communication2 Empathy* Iwanami Shoten Press.

Wüdrich, M., Schwartz, C., Feige, B., Lemper, D. *et al.* (2017) 'Empathy training in medical students--a randomized controlled trial', *Medical Teacher*, 39(10), pp. 1096-1098. <https://doi.org/10.1080/0142159X.2017.1355451>

Appendices

None.

Declarations

The author has declared that there are no conflicts of interest.

This has been published under Creative Commons "CC BY 4.0" (<https://creativecommons.org/licenses/by-sa/4.0/>)

Ethics Statement

Approved by Toho University School of Medicine Ethics Committee (27007).

External Funding

Some funding provided by the Ministry of Education, Culture, Sports, Science and Technology (MEXT). Grants-in-Aid for Young Scientists (B) (Grant Number JP 17K15750).

MedEdPublish: rapid, post-publication, peer-reviewed articles on healthcare professions' education. For more information please visit www.mededpublish.org or contact mededpublish@dundee.ac.uk.