# RESERCH ARTICLE

**The Effect of Reflection Rounds on Medical Students’ Empathy**

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**Declaration of Interest:** The authors declare no declarations of interest.

**Abstract**

Background: Students’ decline in empathy during medical school raises concerns. Empathic physician-patient interactions positively impact health outcomes and patient satisfaction, while improving job satisfaction and reducing physician burnout. Reflection Rounds may be suitable for maintaining student empathy during training.

Hypothesis: Our hypothesis was Reflection Rounds would increase empathy scores of MS3s and results would vary by gender.

Methods:MS3s completed the Jefferson Scale of Empathy upon starting and finishing their clerkship. Students in the experimental group attended four 1-hour sessions, led by a clinician and pastoral team member. The control group did not attend sessions.

Results: No significant difference in baseline empathy scores was found between the two groups. There was a significant increase in student empathy scores among the experimental group, improving mean score from 114.1 to 116.5, *p-*value of 0.04. There were no significant changes among the students who did not participate in Reflection Rounds. Differences were found according to gender, with women scoring higher overall than men at baseline and increasing after sessions.

Conclusion: These results indicate that Reflection Rounds can improve the empathy of medical students, and warrant further investigation into their effects and utility within medical education.

**Introduction**

A decline in empathy in students and residents has been noted as they progress through their medical education and training, with contributing factors including exposure to patient suffering, the hidden curriculum enforced by attending physicians, and burnout.1-6 These factors are especially highlighted during the transition from pre-clinical to clinical in the third year. Empathy is defined here as “a predominantly cognitive (rather than an affective or emotional) attribute that involves an understanding (rather than feeling) of experiences, concerns, and perspectives of the patient, combined with a capacity to communicate this understanding, and an intention to help.”6 This decline raises concerns for health care, because empathic physician-patient interactions have been noted to positively impact both the physician and the patient. For the physician, empathic behavior correlates with improved employment satisfaction and reduced burnout.1,7 For the patient, empathic treatment correlates with increased compliance with medication, increased patient satisfaction and even heightened health as seen in studies of diabetes and high cholesterol control.6-10

In medical education, many forms of reflection have been used to help trainees manage stressful experiences while maintaining emapthy.1,2,7,8,11 For medical students and residents specifically, reflection has been found to help them maintain empathy and process stressful experiences, such as the death of a patient, exhaustion of long work hours, and the intense testing of their medical knowledge.1,7 Some medical schools have trialed reflection in different modalities, including narrative reflection through writing workshops and visual reflection through graphics.2, 11

Reacting to clerkship experiences through blog-style entries was the design for a study of Robert Wood Johnson Medical School students in the Class of 2009 and 2010.7 Students completed the Jefferson Scale of Empathy – Student Version (JSE-S) before and after a yearlong Humanism and Professionalism course during their third year of medical school. Compared to classes before the initiative, the classes of 2009 and 2010 did not have declining empathy scores. Thus, this initiative aided students to maintain empathy during clerkship years.7

In an effort to afford visually-oriented students a chance for reflective expression, the Pennsylvania State College of Medicine started a medical graphics narrative course. Students produce an original comic based on an experience during medical school. The reflective nature of this course was assessed by students in course reviews, which revealed the students believed this process improved attitudes and empathy.11

Another modality of reflection that has been tried in medical education is small group discussion.7 One model, the G-Wish Templeton Reflection Rounds program, was derived to help medical students cope with challenges which are often tied with burnout.12-14 During hour-long sessions, students reflect on the stresses they face, share their feelings, and explore their spirituality in a small group facilitated by a clinical faculty member and a member of the pastoral department.12 These include challenges, such as how to address toxic language faced in the workplace or being repeatedly asked to leave the room by the patient. In addition to challenges, Reflection Rounds provided a space for students to share their positive accomplishments, such as catching a critical part of the history or successfully navigating a conversation about smoking cessation.

Spirituality here is defined as “the way people seek and express meaning and purpose, and how they experience their connectedness to the significant or sacred.”12 Faculty training is focused on modeling compassionate cues and reflective listening, and all discussions are confidential.12 The goal is that, given an opportunity to focus on their own inner growth, students increase self-awareness, become more honest with patients, and are more willing to maintain appropriate patient relationships. The GWish-Templeton Reflection Rounds (G-TRR) were initially implemented at George Washington University School of Medicine and Health Sciences in 2011, and were subsequently implemented at 8 medical schools.

Due to the success that G-TRR demonstrated, 10 additional schools were chosen in 2016, including Sidney Kimmel Medical College at Thomas Jefferson University. At these institutions, this model has been studied with respect to students’ use of spirituality with patients, but no one has looked at Reflection Round’s impact on student empathy.12 Our adaptations to the model shifted the focus to the impact on empathy.Primarily, this impact was achieved through addressing the factors which have been demonstrated to decrease empathy (i.e.: burnout or stress). In being able to address the barriers for maintaining empathy in the clinical setting, we strive to help students recognize them as they inevitably continue to come up. This hopefully makes a more sustainable response, rather than trying to enhance empathy without addressing the factors which decrease empathy.

Based on the evidence from the literature that reflection-based interventions have been successful, and as a school participating in the G-TRR, we wanted to study whether students who participated in these Reflection Rounds would have a change in their empathy toward their patients compared to students who did not experience Reflection Rounds. In reviewing the literature, it was noted that women often had higher pre-test and post-test empathy scores when compared to their male colleagues.2,3,7 Thus, our hypothesis was that the students exposed to Reflection Rounds would have an increase in their empathy scores, and that gender would impact the empathy scores.

**Methods**

Participants

Participants were 272 medical students in their third-year Family and Community Medicine clerkship at the Sidney Kimmel Medical College of Thomas Jefferson University, during the academic year 2017-2018. In making schedules for third year, students enter location and order preferences into an optimization software at the direction of the registrar’s office. Schedules are generated from this optimizer. Students were assigned by optimization software either to complete the clerkship at the Jefferson campus (the experimental group, who completed Reflection Rounds) or at one of 12 affiliate sites (the control group, who did not attend Reflection Rounds). The number of spots are split almost evenly between TJUH and affiliate locations. Although unable to control for if student rankings for the optimization might be related to empathy, the demographics of students at affiliates and at TJUH were equal for gender and age. Thus, students at the TJUH rotation attended rotation rounds, and students at the affiliate locations did not. There were 8 total cohorts for the data collected, and the number of students ranged from 8-13.

Reflection Rounds included four 1-hour sessions during the student clerkship. Facilitators were trained through George Washington University to run these sessions. The content was mainly left open for students to fill in as they responded to prompts such as: how are you transitioning from studying to clinical, have you had a positive or negative patient experience so far. As an addition to the George Washington curriculum, we asked students to submit a cartoon which depicted a meaningful experience during the clerkship, and this was the focus of the final Reflection Rounds session. The cartoon was chosen because it offers a different type of reflection.11 Data were collected from 8 cohorts who completed the clerkship at different times during the year. IRB approval was obtained, the study was deemed exempt. Completion of the survey was voluntary for students.

Procedures

At the clerkship orientation (pre-test), and again at the end of their clerkship (post-test), participants in both groups were asked to complete a paper survey that included demographic questions (age and gender), and the Jefferson Scale of Empathy. Participation was voluntary, and participants were given anonymous identifiers to allow us to pair pre- and post-tests.

Measurement of Empathy

The Jefferson Scale of Empathy, medical student version (JSE-S) has been psychometrically analyzed and demonstrated to be valid in the use of self-reported empathy, insofar that “the findings provide empirical evidence suggesting that physicians’ self-reported empathy and their patients’ perceptions of physician empathy are significantly correlated.”15

The scale includes 20 items, answered on a 7-point Likert scale (1=strongly disagree to 7=strongly agree),16 and encompasses three underlying components: Perspective Taking, Compassionate Care, and Standing in the Patient’s Shoes.6,17 Total scores range between 20-140, with higher scores indicating higher empathy.16 Throughout the literature, the JSE is one of the most widely used and studied measures of empathy in medical students and medical education as well as with other health professions learners.15,17 An abundance of evidence has been reported in samples of health professional students and practitioners in support of the psychometrics of the JSE (6,pp. 84-128, 276-286).

Statistical Analysis

Usable samples had to meet the following requirements to be included in the final matched analysis: completed respondent ID field, completed at least 80% of the items of the JSE-S, and completed both a pre-test and a post-test. Statistical analyses were performed on the usable samples only. Independent t-tests, paired t-tests, and independent samples ANOVAs were used to provide descriptive and inferential statistics on empathy scores. The t-tests were 2-tailed t-tests to evaluate for change in either direction. Data were analyzed using SAS version 9.4.

**Results**

A total of 170 respondents (63% of the total cohort) returned completed pre- and post-test surveys and were included in the analysis. Descriptive statistics of empathy scores for the experimental group (M=114.1, SD=10.9 in the pre-test; M=116.5, SD=12.8 in the post-test, n=72) and control groups (M=113.9, SD=12.2 in the pre-test, M=113.7, SD=15.1 in the post-test, n=98) are reported in Table 1. An independent samples t-test indicated no statistically significant difference in the pre-test (baseline) empathy scores between the two groups (*t*(1,68)=0.11, *p*=0.91).

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| **Table 1:** Descriptive statistics and results of inferential statistical analyses on changes in empathy scores between the pre-test and post-test in the experimental and control groups (n=170) |
|  |  |  |  |  |  |  |  |  |  |
| **Group**  | **N**  | **Pre-Test****Empathy Score M(SD)** | **Post-Test****Empathy Score****M (SD)**  | **Paired T-Test:** **Change Between Pre- and Post-Test** |
| Experimental | 72 | 114.1 (10.9) | 116.5 (12.8) | t(71) = 2.07, *p* = 0.04\* |
| Control  | 98 | 113.9 (12.2) | 113.7 (15.1) | t(97) = 0.14, *p =* 0.89 |
|  |  |  |  |  |  |  |  |  |  |
| \**p* < 0.05 |  |  |  |  |  |  |  |  |  |

Using paired t-tests, we observed a statistically significant change in empathy scores between pre- and post-test in the experimental group (*t*(71) = 2.07, *p*<0.05, effect size estimate using Cohen’s *d* = 0.22), and no change in the control group (*t*(97) = 0.14, *p =* 0.89); see Table 1. We also analyzed empathy scores and their changes according to gender. In the experimental group, the change in empathy scores was statistically significant for women, but was not statistically significant for men. No significant change in empathy scores was observed in the control group for either gender (Table 2). Across both groups, women had statistically significant higher empathy scores than men in each test administration (Table 3).

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| **Table 2:** Descriptive statistics and results of inferential statistical analyses on changes in empathy scores between the pre-test and post-test for each gendera in the experimental and control groups (n=166) |
| **Gender**  | **N**  | **Pre-Test****Empathy Score M(SD)** | **Post-Test Empathy Score M (SD)**  | **Paired T-Test:** **Change Between Pre- and Post-Test** |
| **Experimental** **Group** |
| **Men** | 30 | 113.3 (12.7) | 114.1 (14.9) | *t*(29) = 0.41, *p =* 0.69 |
| **Women** | 40 | 115.3 (9.2) | 117.9 (11.2) | *t*(39) = 2.10, *p =* 0.04\* |
| **Control** **Group** |
| **Men** | 46 | 108.9 (13.7) | 108.1 (17.7) | *t*(45) = 0.50, *p =* 0.62 |
| **Women** | 50 | 118.8 (8.2) | 119.2 (10.0) | *t*(49) = 0.35, *p =* 0.73 |
|  |  |  |  |  |  |  |  |  |  |
| a Excludes participants who did not report their gender (2-3%) |
| \**p* < 0.05 |  |  |  |  |  |  |  |  |  |

We examined empathy scores between the eight cohorts to determine whether there were statistically significant differences in scores by cohort. Results of analysis of variance indicated that there were no statistically significant differences between cohorts in the control group (*F*(7,90) = 0.35, *p*=0.93 in the pre-test; ­and *F*(7,90) = 0.43, *p*=0.88 in the post-test) or in the experimental group (*F*(7,64) = 1.75, *p*=0.11 in the pre-test; and *F*(7,64) = 1.04, *p*=0.41 in the post-test).

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| **Table 3:** Descriptive statistics of empathy scores in each test administration, by gender |
|   |   | **Pre-Test****Empathy Score** |   | **Post-Test****Empathy Score** |
| **Gender**  | **N**  | **M**  | **(SD)** |  | **M**  | **(SD)** |
| Men  | 76 | 110.6 | 13.4 |  | 110.5 | 16.8 |
| Women  | 90 | 117.2 | 8.8 |   | 118.6 | 10.5 |
| Independent Samples T-Test |  | *t* (125.6) = 3.69, *p* < 0.001 |  | *t* (121.5) = 3.65, *p* < 0.001 |

We also examined differences in scores based on whether the participant’s clerkship was early (cohorts 1-4) or late (cohorts 5-8) in the academic year. Results of independent samples t-tests indicated no statistically significant differences for the control group (*t*(1,96)=0.48, *p*=0.65 in the pre-test; and *t*(1,96)=0.44, *p*=0.66 in the post-test) or for the experimental groups (*t*(1,70)=0.45, *p*=0.65 in the pre-test and *t*(1,70)=1.29, *p*=0.20 in the post-test).

Further statistical analysis was performed on the empathy scores by age group. Results of the ANOVA revealed that there were no statistically significant differences between different age categories for the control group (*F*(2,95) = 2.11, *p*=0.13 in the pre-test; *F*(2,95) = 1.47, *p*=0.24 in the post-test) or for the experimental group (*F*(2,69) = 1.80, *p*=0.17 in the pre-test; *F*(2,69) = 0.83, *p*=0.44 in the post-test).

**Discussion**

Research has established that empathy is connected with improved patient and clinician outcomes.1,7-10 Our findings indicate that the Reflection Round intervention can improve female students’ empathy as designed. With modifications to design we could focus on improving male’s empathy.

Specifically evaluating the experimental group by sub-groups of men and women yielded interesting results. It was noted that the mean score for women increased a statistically significant amount from pre-test to post-test. While the mean score for men increased as well, it was not quite statistically significant. These two findings are interesting when combined with the information that women had higher empathy baseline results. Hojat suggests that persons with higher empathy scores at baseline often experience less or no decline compared to persons with lower baseline empathy scores.5 Our data demonstrates that men, who had lower baseline empathy scores compared to women, did not respond as significantly to the intervention as women. Thus, it might be worth trying sex specific interventions to have maximum efficacy.

Further research is needed to determine the components underlying the gendered effect of the intervention, as well as long-term effects of the treatment, as little was found in the existing literature. The data demonstrated that women, independent of control or intervention group, reported a higher score for empathy. This trend is supported in other studies, which note that gender is a variable that should be considered in research.24 Additionally, it was interesting to note that the intervention was effective across all ages of students, as demonstrated by the absence of a significant difference between the age groupings.

A contributing factor toward improved patient and clinician outcomes is patient-centered communication. The ability to effectively and empathetically communicate with patients is the hallmark of quality care. It enhances the patient-physician relationship and outlines instructions for the patient effectively, laying the strongest groundwork for patients to comply with care. Medical student scores on the JSE-S have been positively associated with emotional responsiveness and patient-centered communication, as analyzed by the Roter Interactional Analysis System (RIAS).25

A statistically significant relationship between patient communication and empathy scores highlights the importance of maintaining and fostering empathy in medical students. Empathy will inform and impact every interaction medical students have with patients, and this significant relationship suggests that self-perceived empathy correlates with communication skills.25 Thus, emphasizing empathy and empathic skills through reflection based interventions during training aids medical trainees to become even more empathetic, and better communicators, building even stronger relationships and outcomes for patients.

**Limitations**

Our study sample came from a single-institution in a single academic year so results may not be generalizable. The JSE-S is a self-reporting measure, however, it continues to be the most frequently used scale in medical education research on empathy.15,17 Furthermore, results from other interventions targeted toward empathy and using the JSE support our findings by demonstrating similar upward trends in empathy and women scoring higher than men.7,23

With respect to internal validity, this study might be susceptible to the testing effect as there were identical pre and post clerkship surveys. However, these were scheduled 6 weeks apart which might mitigate some of the effect as students might not recall what their prior answers were. With respect to external validity, this study might be susceptible to the reactive effect of testing. This is when the pretest changes the subject’s sensitivity to the variable being measured. If this was the case, then subjects might have modified their behavior, which then might have falsely elevated their post clerkship survey. However, the control group, who completed a pre- and post-test survey, demonstrated a slight but not statistically significant downward trend in mean empathy score. Therefore, it is likely there was not reactive effect of testing.

Lastly, although unable to assess how students’ rankings for optimization might have contributed to some impact on empathy scores, the demographics of students at affiliates and at TJUH were equal for gender and age and baseline empathy scores were comparable; thus, the optimization rankings are likely noncontributory.

**Conclusion**

This is, to our knowledge, the first report of the impact of Reflection Rounds on empathy among medical students. Findings suggest that Reflection Rounds may be a valuable addition to medical school curriculum to help reverse the downward trend in empathy that has been reported.9,18,19 Other studies using reflection as an intervention support this assertion.13,14,20-22 Thus, empathy should be viewed as a teachable quality in medical education. It is suggested that the decline in empathy is a self-protection mechanism, where students attempt to diminish the connection to patients who are suffering.20 However, providing outlets for students to reflect on these difficult situations can improve their response, their education and their ability to competently participate in patient centered care. Furthermore, research repeatedly demonstrates that empathy is connected with improved patient and clinician outcomes.1,7-10 Thus, empathy and interventions to address empathy in students should be prioritized in medical education.

For future research, we would like to include a qualitative aspect to the student experience in Reflection Rounds to see how the students respond to the intervention and how we can improve it. Studying potential longitudinal effects of this intervention on student empathy and evaluating different modalities to evaluate improvement in male’s empathy are additional directions for future research. Overall, our results suggest that empathy can be a teachable quality and should be recognized and discussed in medical education.14

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