

RESEARCH ARTICLE

Reflective writing and its impact on empathy in medical education: systematic review

Isabel Chen^{1,2}, Connor Forbes^{1*}¹University of British Columbia Faculty of Medicine, Vancouver, Canada; ²Yale University, New Haven, CT, USA**Abstract**

Purpose: Medical schools are increasingly aware of the ways in which physician empathy can have a profound impact on patients' lives and have developed humanities initiatives to address this concern. Reflective writing in particular is more commonly promoted in medical curricula, but there is limited research on the impact of reflective writing on medical student empathy levels. It aims to find the emotional effects of reflective writing interventions on medical and health-care students by systemic review. **Methods:** Two investigators independently reviewed educational publications for critical analysis. This review focused systematically on quantitative papers that measure the impact of reflective writing on empathy. **Results:** Of the 1,032 studies found on Medline and CINAHL, only 8 used quantitative measures pre- and post-written reflection to measure any impact on empathy outcomes. The outcomes measured included impact of reflective writing exercises on student wellness, aptitude, and/or clinical skills. Of these studies, a significant change in student empathy was observed in 100% of the studies, demonstrating a significant change in outcomes. **Conclusion:** Although the lack of homogeneity in outcome measurement in the literature limits possible conclusion from this review, the overwhelmingly positive reporting of outcomes suggests that reflective writing should be considered in any medical curriculum.

Key Words: *Aptitude; Clinical competence; Empathy; Medical students; Writing*

INTRODUCTION

Medical education trains students to become clinicians with strong technical and interpersonal skills that significantly impact patient outcomes. Research shows that stress in medical practice leads to clinician burnout and a loss of physician empathy, lower quality patient care, patient dissatisfaction, and increased medical errors and malpractice [1-4]. These declines in mood and attitude begin even as early as the third year of medical training [5]. Previous reviews have addressed the importance of reflective practice in the curriculum [6] and have looked at the effects of various methods of reflection as teaching tools in medical education, including literature courses

and communication workshops [7,8]. In response to these findings, reflective practice is receiving increasing focus in medical schools across Canada and the United States due in part to the Accreditation Council for Graduate Medical Education (ACGME) and CanMeds competencies [9]. Yet there is a lack of convincing evidence in the literature [8]. One author lamented in a review on reflection that "the literature is replete with accounts of the possible benefits to practitioners and clients of using reflection in practice, yet this amounts to a rather scant evidence base" [10].

Previous papers classified as reviews on the topic of reflective writing in medical education exist [11,12], but do not exclusively review papers with quantitative outcomes. The potential for reflective writing to improve exam scores, clinical skills and diagnostic accuracy have been shown in recent studies [13,14]. These important clinical improvements may occur in addition to the touted potential to broaden students' intellectual and emotional horizons [15]. Many of the studies re-

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viewed, however, are not structured as reproducible given their design. To our knowledge, there are no currently existing systematic reviews of the literature on the emotional effects of reflective writing interventions on medical and healthcare students. This paper will address this deficit.

METHODS

Criteria for studies in this review

Types of studies are conference proceedings, abstracts, and full papers. Types of participants are students in all health occupations (dental, medical, nursing, pharmacy, and premedical). Types of interventions are interventions of interest were reflective and written (including journaling, diaries, blogs, and reports). Other forms of reflection such as art and music were excluded.

Types of outcome measures (1) primary outcome was a change in student wellness, aptitude and/or clinical skills; (2) secondary outcome was identification of strengths and weaknesses of various reflective writing interventions.

Study methods

Search strategy

A comprehensive systematic search was conducted in Medline and Cumulative Index to Nursing and Allied Health Literature (CINAHL). The electronic search included all English-language articles published until January 22, 2013. We did not include empathy-related terms in the search because doing so eliminated a body of articles that described the effect of reflective writing with different language.

Medline was searched using OvidSP interface on 22 January, 2013, for the period 1,949 to the week of 21 January, 2013. We searched for any reflective work—including written journals, reports or diaries—performed by students in health occupations. CINAHL was searched using EBSCOHost interface on 22 January, 2013, for the period 1982 to the week of 21 January, 2013. The search terms, similarly, included any reflection or reflective work performed by students in health occupations.

Study selection

Two reviewers (CF and IC) independently assessed all search results using inclusion criteria. The first round of screening was to exclude: strictly qualitative abstracts from non-health professional fields, articles without a written reflective component as opposed to other forms (drawing, music, etc.), absence of pre- or post-intervention measures. Articles without control groups were not excluded in this round. In our second round of screening, the remaining mixed methods papers were critiqued based on international collaborative guides for analyzing

medical education interventions [16]. Each article's *question, rationale, objectives, study design, intervention, evaluation, and results* were appraised. Outcomes of interest included quantifiable impact or efficacy of reflective writing exercises on student wellness, aptitude and/or clinical skills.

Data selection and management

Both investigators independently reviewed all search results from both rounds. After completion of the second round of screening, all accepted studies were combined and re-assessed by each reviewer for adherence to criteria. All articles that met inclusion criteria according to both reviewers were included in the final analysis. Key data extracted from each article was based on the criteria by Reed et al. [16]. The manuscript was checked according to preferred reporting items for systematic reviews and meta-analyses (PRISMA) and all topics were fulfilled.

Statistical analysis

Summary statistics were calculated for common study characteristics and features.

RESULTS

Our search revealed 706 papers from Medline and 326 papers from CINAHL, totaling 1,032. The abstract analysis of all papers yielded 53 papers that were thought to meet inclusion criteria. Full manuscript review narrowed this to 8 final papers that quantified changes in empathy and patient interaction skills following an intervention that involved reflective writing. The eight papers that met final inclusion criteria are summarized in Tables 1 and 2. Of note, seven of these papers describe interventions in the United States, while 1 took place in Sweden. No studies of the Canadian population met inclusion criteria. The papers all staged interventions in students in the allied healthcare professions: four of the papers targeted medical students and the other four targeted pharmacy students.

Although all the included papers used reflective writing as an intervention, their approaches to its introduction differed. Two of the studies introduced reflective writing as an isolated update to a previously existing course [17,18]. In three other studies, reflection was one of several components instituted in a course's renewed curriculum, or in a new course [19-21]. One study boldly randomized students to write monthly essays reflecting on hypothetical encounters in different styles: clinical reasoning or reflective point-of-view [22]. This was the only study in our review to run simultaneous randomized interventions as part of a medical school curriculum; no comment was made by the authors on strategies to enlist administrative

Table 1. Study locations, populations, and intervention protocols

Study	Country	Population studied	Intervention protocol
Haack and Phillips, 2012 [19]	USA	135 PharmD students	Cohort study on a cultural competency course with a renewed curriculum. Group and individual reflection activities following lectures and clinical encounters, including a reflective paper.
Lie et al., 2010 [17]	USA	376 Medical students	Guided written reflection following clinic encounters, performed in small groups over a 4-week family practice elective.
Lonie and Rahim, 2010 [18]	USA	210 Pharmacy students	The addition of a reflective writing component to a communication skills course over one semester. This included two short (3–5 page) and one long (6–8 page) reflective papers.
Plake, 2010 [21]	USA	20 Pharmacy students	Weekly written reflections in a book club focusing on novels describing patients' experiences with chronic illness.
Roche, 2007 [20]	USA	15 Pharmacy students	Reflective journals kept following readings and discussions in a Native American service learning elective.
Shapiro et al., 2006 [22]	USA	92 Medical students	Students randomized to point-of-view reflective writing or clinical reasoning style of writing for monthly essays following simulated patient modules.
Wallman et al., 2008 [24]	Sweden	146 Pharmacy students	Pre- and post-course reflective essays for a 6 month pharmacy internship experience.
Westmoreland et al., 2009 [23]	USA	237 Medical students	Pre- and post-reflective writing for meeting sessions with a geriatric population.

Table 2. Study outcomes and conclusions

Study	Outcome(s) measured	Result
Haack and Phillips, 2012 [19]	Cultural competency through the Inventory to Assess the Process of Cultural Competence-revised (IAPCC-R): a validated self-assessment tool.	Overall cultural competency did not differ between intervention and non-intervention groups, but cultural skills and cultural encounters scores were higher for the intervention group.
Lie et al., 2010 [17]	An assessment questionnaire to quantify the new course's relevance in preparing students for a cross-cultural practice; a pre- and post-essay style test on cultural competency.	The students' responses were 83% positive for the course, and they showed a statistically significant score improvement on the post-test relative to the pre-test.
Lonie and Rahim, 2010 [18]	Objective Structure Clinical Examination (OSCE) scores and multiple choice examinations for a communications course.	A statistically significant increase in multiple choice scores was observed in the intervention group, with no change in OSCE scores.
Plake, 2010 [21]	After the elective, students completed retrospective surveys (5-point Likert scale) on their perceived functional empathy before and after the course.	Students showed statistically significant increases in self-assessed ability to complete empathy and compassion related tasks.
Roche, 2007 [20]	A post survey evaluation of course objectives, including empathy-related statements regarding underserved populations.	Researchers found significant improvements in students' "cultural appreciation and respect, awareness of health disparities and the need for social responsibility, appreciation for the spiritual aspect of wellness, and the positive impact of traditions on health, and a recognition of professionally rewarding practice opportunities."
Shapiro et al., 2006 [22]	OSCE exams scores were compared.	The two groups did not differ on OSCE exam scores, but in the essay point-of-view writers were more likely to adopt the first person, to show empathy for the physician, and showed a higher score in overall empathy and insight.
Wallman et al., 2008 [24]	Essays were graded on a rubric of level of reflection with good inter-rater reliability ($k_5 = 0.63$).	The levels of reflection scored in the essays pre- and post-course increased significantly.
Westmoreland et al., 2009 [23]	Reflective writing was analyzed for themes as a means of assessing changing attitudes and perceptions toward the elderly; a written pre- and post-survey on geriatric attitudes was administered; a learner satisfaction survey was administered.	Reflective writing analysis found a change in perception of elderly: 27% of participants changed their negative into positive or reinforced their pre-existing positive attitudes. 98% of students were also satisfied with the learning experience delivered by the sessions and writing exercises.

leadership to support such important research.

In the analyzed studies, empathy was measured in student self-perception, patient feedback, and third-party observation. Many of the studies also used multiple metrics to strengthen their findings. Two of the papers used previously validated

metrics: one for empathy and one for attitudes towards geriatric patients. These were the best objective indicators of the effects of the interventions on empathy. Another two papers used multiple choice exams without external validation focusing on communication skills. Although these papers did not

directly measure empathy, it would be expected that communication skills would correlate with students' investments in and compassionate care for their patients. Four papers looked for outcomes in student writing such as insight in an essay on a patient death, the level of reflection in essays, the cultural sensitivity in an essay, and a holistic evaluation of writing. Each of these directly or indirectly requires insight into the patient's psyche—a key component of empathy. Finally, one paper measured its outcomes through a survey on satisfaction with the intervention and its effect on the students' mindset. This self-reporting mechanism was the weakest metric, especially because the study lacked a control group for comparison.

Unfortunately, seven of these eight papers addressed only short-term outcomes of one year or less. The lone paper that examined long-term outcomes also only measured outcomes immediately following the intervention, but it was defined as a long-term outcome since the intervention took place over four years. None of the papers measured empathic changes after any significant latency period. This makes it difficult to accurately gauge profound changes compared to situational, performance-based empathy.

The composition of control groups was inconsistent across the papers. Half of the papers (4/8) used a control group that was composed of different subjects than the intervention group. Of these 4, half again (2/8) used a concurrent comparison group, while the other half (2/8) used a cohort control strategy where the results of a healthcare class after the implementation of a new curriculum change was measured against the results of the previous healthcare class. In the remaining papers, 3/8 (37.5%) used pre- and post-tests to compare the intervention. One study had no control group, which is a serious concern, but the conclusions drawn by this paper were adequately tempered to warrant inclusion in this review. Overall, limitations concerning control groups contributed to the shortcomings in study design that curb the conclusions that can be drawn from this review.

DISCUSSION

Despite the current popularity of reflective writing in medical education, there is very limited quantitative data that prove its impact on students' educational experiences, clinical skills or future well-being. From our initial search, we yielded a total of 1,032 studies, of which only 8 fit our inclusion criteria. The data, although limited, did show improvements in students' levels of empathy and respect for patients [20-23], ability to self-reflect [24], cultural competency [17,19], and communication skills [18].

The review revealed significant inconsistencies in study design. In evidence-based medicine, randomized controlled tri-

als (RCTs) are the gold standard; in medical education, however, few interventions use this study design. Whether this discrepancy is based on inadequate resources, educational philosophy or ethics [25,26], the literature is full of observational studies and quasi-experimental methods [15,27,28]. The studies in this review were all unique reflective writing programs with no reproducible measurable outcome, which makes translation and application of these initiatives difficult. The 8 studies identified were completed at different institutions, limiting the opportunity to measure statistical power and generalizability. This review is limited by marked heterogeneity in study designs, each article applying its own intervention to unique populations with different definitions and measures of empathy. Methodological critique was therefore limited. In order to expand available literature, we did not limit studies to medical students and the data from other health professions may not be directly beneficial to medical students. These limitations make it very difficult to meet the need for evidence-based medical training.

Despite program variability, the review illustrated consistent, positive outcomes of self-reflection on student well-being and clinical skills. It is important to note that several of the papers identified reflective writing as both intervention and metric [24]. The pre- and post-internship reflective essays on patient counselling explored by Wallman et al. [24] is a strong example that showed a statistically significant difference in depth of reflection and empathy. Through the authors' lens, reflective writing can be seen as both a test that teaches and measures empathy changes. Its use as a self-validating empathetic intervention in particular deserves further exploration.

Physician burnout negatively influences patient care, patient satisfaction, medical errors and malpractice [1-4]. Research has shown that loss of empathy and cynicism begins in the early years of medical training [5], yet none of the studies in this review measured students' responses from the perspective of patients and patient-care. Short-term improvements were shown in student insight and empathy toward patients [17,19-23], and there is potential for long-term gains with improvements in study design. Finding reliable and effective early interventions in medical education that can mediate loss of compassion and burnout has the potential to profoundly improve health care.

The studies that met all of our inclusion criteria did not universally measure the same traits related to empathy, use the same scales, and/or structure the interventions in similar fashions for similar durations. As such, it is essential that future studies focus in on one or two empathy- or compassion-related signs and limited personal or professional outcomes to avoid measuring empathy as a colossal, complex phenomenon [29]. With all of these limitations in mind, it is still telling that all of

the papers (8/8) showed an improvement in students' empathy through the primary or secondary subset of metrics. All of the papers with multiple choice examinations showed an improvement in student scores in part or all of the examinations, and for those papers whose outcomes were measured with essays the students showed an increase in insight, empathy, or cultural sensitivity. Perhaps most interestingly to medical educators, the survey on student opinion had a majority of positive responses to the change in curriculum. These positive data support an argument for reflective writing in a medical curriculum. A specific methodology has yet to be agreed upon.

Despite the dearth of literature that demonstrates the impact of reflective writing on students' clinical skills and performance, there is a wealth of studies that illustrate the improvement of student empathy. There is significant room for improvement in designing reflective writing interventions that are consistent with focused empathy outcomes to guide evidence-based medical curriculum. This would improve the quality of writing exercises that are growing in popularity among health professional programs. This research shows that health provider burnout begins early on in medical training and early reflective interventions targeted against compassion-loss can have profound potential on physician well-being and patient outcomes.

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CONFLICT OF INTEREST

No potential conflict of interest relevant to this study was reported.

SUPPLEMENTARY MATERIAL

Audio recording of the abstract.

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