

Measure of empathy change in pharmacy students through a behaviour change assignment

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Abstract

Background: Current standards for pharmacy education include developing skills in empathy as a part of curriculum.

Aims: The primary purpose of this research was to assess whether a behaviour change assignment resulted in increased empathy in pharmacy students as evaluated by a validated empathy scoring system.

Methods: Pharmacy students completed a pre-assessment utilising the Kiersma-Chen Empathy Scale. Students were then given a behaviour change assignment where each student chose a personal behaviour to change for a ten days followed by a post-assessment utilising the same tool.

Results: Pharmacy students achieved a statistically significant improvement in empathy score after completing the behaviour change assignment ($p < 0.011$) with a response rate of 81.3%. Age, gender, campus, or nature of the behaviour change did not predict results.

Conclusions: A behaviour change assignment that utilised minimal classroom time and resources without relation to a specific disease state resulted in increased empathy in pharmacy students.

Keywords: Behaviour Change, Empathy, Pharmacy Student

Introduction

Empathy is defined in different ways depending on the source, however, the overarching premise is that empathy is “the ability to see the world as others see it, be nonjudgmental, understand another’s feelings, and communicate the understanding” (Kaplan *et al.*, 1989). Even with varied definitions, it is agreed upon that empathy is an essential skill in the healthcare field, including pharmacy (Medina *et al.*, 2013; Accreditation Standards, 2006). The Center for Advancement of Pharmaceutical Education (CAPE) has specified an outcome that upon graduation, pharmacists should “exhibit a caring and respectful attitude and demonstrate empathy” (Medina *et al.*, 2013). Additionally, the Accreditation Council for Pharmacy Education (ACPE) identified empathy as a characteristic that should be considered starting at the admissions process and throughout a student’s progression in the curriculum (Accreditation Standards, 2006). As the ACPE and CAPE standards continue to be updated, an increased emphasis has been placed on skills relating to empathy (Accreditation Standards, 2006; Medina *et al.*, 2013). As pharmacists interact with patients in a variety of settings, empathy for various disease states, socioeconomic situations, and patient populations is crucial for appropriate and maximal delivery of healthcare. Empathy is an important skill for healthcare education to develop in its future healthcare practitioners as it has been shown to significantly increase patient adherence to healthcare plans, reduce medical errors, and improve patient satisfaction (Roter *et al.*, 1998; Vermeire *et al.*, 1998;

Accreditation Standards, 2006). A review by Derksen and colleagues of seven empathy studies showed that empathy also has an important role in communication, reducing patient anxiety and stress, and leads to better diagnostic and clinical outcomes in the medical field (Derksen, 2013).

In spite of the need for empathetic healthcare practitioners upon graduation, there is evidence that empathy can decrease as a student progresses through various graduate healthcare curriculums including nursing and medicine with inconclusive results in pharmacy (Kaplan *et al.*, 1989; Stepien & Baernstein, 2006; Nunes *et al.*, 2011; Wilson *et al.*, 2012). For this reason, there have been several studies that measured and developed efforts to increase empathy in students. One example had students play a board game and another had students watch a performance, both specific to displaying elderly patients’ struggles within the healthcare system (Chen *et al.*, 2011; Van Winkle *et al.*, 2012). The first showed an initial significant increase in empathy, however, it was not sustained when retested at the seven and 26 day marks (Chen *et al.*, 2011). The second study found an improvement in both medical and pharmacy students in a few outcomes related to empathy and reported higher empathy scores in women compared to men, although overall, no sustained change in empathy was found across groups (Van Winkle *et al.*, 2012). Several studies have provided students with patient scenarios to perform such as managing medications or shopping for healthy foods based on specific chronic disease states, socioeconomic difficulties, low literacy, or poverty (Chen *et al.*, 2008;

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Trujillo, 2009; Fjortoft *et al.*, 2011). Two of these studies revealed increased empathy as demonstrated in student reflections, but it was not formally measured (Trujillo & Hardy, 2009; Fjortoft *et al.*, 2011). All of these studies reported empathy changes in regards to a specific and assigned disease state requiring intensive resources and significant classroom or experiential rotation time in order to be achieved (Wilkes *et al.*, 2002; Chen *et al.*, 2008; Trujillo, 2009; Fjortoft *et al.*, 2011). Another empathy study found that when the curriculum from an ethics and oncology course were combined, empathy in regards to death and dying was significantly increased ($p < 0.008$) over a five week instructional model (Manolakis, 2010). Most recently, Lor and colleagues measured empathy changes over a three day simulation of activity loss of dominant hand usage, vision, and speech. Empathy increased in pharmacy students at seven days post-intervention, however, was not sustained at ninety days (Lor, 2015).

Studies have used a variety of methods to measure empathy. Some utilise validated surveys such as the Jefferson Scale of Empathy-Health Professional Students (JSE-HPS) or the Balanced Emotional Empathy Scale (BEES) to measure and record empathy. The JSE-HPS has been validated specifically in pharmacy students, however, the cost of the survey tools can be a limitation (Trujillo & Hardy, 2009; Van Winkle *et al.*, 2012; Kiersma *et al.*, 2013; Lor, 2015). The Kiersma-Chen Empathy Scale was validated against the JSE-HPS for measuring empathy in pharmacy students (Kiersma *et al.*, 2013). In addition to cost, the Kiersma-Chen Empathy Scale was created to have an instrument to measure both the cognitive and affective constructs of empathy based in theory that differs from the JSE-HPS (Kiersma *et al.*, 2013). The Kiersma-Chen Empathy Scale is a 15 question survey utilising a Likert scale to indicate a level of agreement with each statement. Four of the questions are reverse coded. A total composite score is obtained with a higher score indicating an increase in empathy. No minimum score increase is needed and any increase is an indication of increased empathy. The maximum score possible is 105. The validation to the JSE-HPS displayed the Kiersma-Chen Empathy Scale as an appropriate tool for measuring empathy in pharmacy and nursing students (Kiersma *et al.*, 2013). Although not a validated tool, some previous studies have also relied on student reflections, although, this is a less objective tool.

In spite of some positive literature related to empathy, one shortcoming that should be considered is that research has been limited to measuring an increase in empathy surrounding a specific disease state or socioeconomic issue. Secondly, these exercises often involve extensive effort in terms of assignment creation, grading, and classroom or experiential training time and are often limited to small groups (Wilkes *et al.*, 2002; Chen, 2008; Trujillo & Hardy, 2009; Manolakis *et al.*, 2010; Fjortoft *et al.*, 2011; Van Winkle *et al.*, 2011). There remains a need for an empathy exercise in healthcare curriculum that requires fewer resources and is applicable to a wider population.

In order to deliver effective healthcare, many disease state treatment plans necessitate changes in behaviour in

addition to pharmacotherapy management. Many different strategies and theories have been applied to influence behaviour change such as individual cognitive change theory, ecological and community intervention models, changing multiple behaviours concurrently or a single behaviour at a time with no established method identified as the most effective (Ory *et al.*, 2002; Nigg *et al.*, 2002). Increasing empathy related to behaviour change is a possible solution to help future healthcare practitioners create behaviour change in patients. To accomplish this, a method for increasing empathy about behaviour change for the healthcare curriculum could be created. It would be best if the method was applicable to the myriad of disease states and populations that require behaviour change by not only targeting a condition or socioeconomic trait.

A previous study that looked at students' behaviour changes included the My First Patient program, where students were asked to complete a series of health screenings and rate behaviours such as sleep, exercise, and nutrition (Maffeo *et al.*, 2009). Students were then asked to determine their own goals for improvement, implement changes to their own behaviours, and keep track of their progress (Maffeo *et al.*, 2009). Although empathy was not measured in this study as an end point, written reflections revealed an increased awareness and understanding of patient's struggles when asked to change behaviours which students related to sleep, exercise, and nutrition among other changes (Maffeo *et al.*, 2009). Curriculum that combines empathy and behaviour change may be beneficial in developing empathetic healthcare practitioners prepared to help patients change behaviours as part of their disease management. Pharmacy curricula currently can have difficulties in teaching students soft skills such as empathy in the classroom prior to experiences on clinical rotations and a method to improve or address empathy in the classroom is desirable. As the pharmacist role continues to expand, the need to ensure empathetic providers are developed rests on pharmacy curricula to adequately train students.

The primary purpose of this research is to assess whether a behaviour change assignment utilising minimal classroom time and resources without relation to a specific disease state results in increased empathy in pharmacy students as evaluated by the Kiersma-Chen Empathy Scale.

Methods

This research was completed using a validated empathy assessment, the Kiersma-Chen Empathy Scale, to measure pre- and post-assessment empathy scores at Wingate University School of Pharmacy at both the main campus and a satellite campus (Kiersma *et al.*, 2013). The Kiersma-Chen Empathy Scale was validated against the JSE-HPS for measuring empathy in pharmacy students (Kiersma *et al.*, 2013). The project was approved by the Wingate University Research Review Board.

Pharmacy students in the third year of graduate level curriculum in a pharmacotherapy course were given the opportunity to complete the pre-assessment of the Kiersma-Chen Empathy Scale to determine an initial

value. The assessment was not required and was not part of the grade for the pharmacotherapy course and it was completed as a paper assessment during classroom time taking approximately ten minutes. Each student participant completed an informed consent at both the pre- and post-assessment. Students chose a four-digit code to be placed upon each page of the pre-assessment and a student leader compiled a Google™ document so that each student could list his or her four-digit code to avoid duplication; however, the researchers were not given access to the document to allow for anonymity.

Upon completion of the assessment, students were given a behaviour change assignment in which each individual was asked to change a personal behaviour of his or her own choice for the following ten days. Although the completion of the pre- and post-assessments were not required or part of the students' grade in any way, the behaviour change assignment reflection and daily log of activity were turned in and graded as part of the course. Students were asked to keep a log of the ten days and state each day whether he or she was successful or not each achieving the behaviour change. Examples of behaviour changes included exercising for thirty minutes daily, consuming 64 fluid ounces of water daily, eliminating soda from the diet, obtaining eight hours of sleep each night, and quitting smoking. Students were encouraged to make behaviour change goals that were specific, measurable, realistic, and could be completed each day. At the end of ten days, students were asked to repeat the assessment and reuse the same individual four-digit code. Demographic data including age and gender were also compiled and students were asked to designate the individual behaviour change as positive or negative. Positive behaviour change was defined as adding or increasing behaviour such as increasing exercise to twenty minutes daily or adding two servings of vegetables daily to food intake. Negative behaviour change was defined as decreasing or eliminating behaviour such as decreasing soda consumption to one beverage daily or stopping the use of cigarettes. Students were also asked to complete a written reflection essay at the end of the experience that was graded.

Utilising the four-digit code, the pre- and post-assessment scores for each individual student were matched and analysed utilising SYSTAT® 13 software. Assessment scores were hand calculated and entered into the database by a researcher, which was then double-checked. Descriptive statistics were used for individual demographic items. A paired *t*-test was used to determine the difference for the pre- and post-assessment empathy scores for each student. Significance was set at $p < 0.05$. Logistic regression was used for age, gender, campus, and type of behaviour change because it would determine if any of the individual factors were predictors for improvement in empathy scores.

Results

Ninety-one students were eligible for completing the study and 74 students completed both the pre- and post-assessment score for an 81.3% response rate. Twenty-nine males (39.1%) and 45 females (60.9%) participated with further demographic descriptions available in Table I. The pre-assessment average was a score of 82.1 and the post-assessment score was an average of 84.4 showing a statistically significant change in score, ($p < 0.011$, 95% CI -4.1- -0.6) demonstrating an increase in empathy on the paired *t*-test. At this time, according to the creators of the empathy scale, no minimum improvement has been established. Other scoring data from both pre- and post-assessment scores is shown in Tables II and III.

Table I: Demographic Data

Category	Results
Age (years)	Minimum: 22 Maximum: 46 Mean: 26.3 Standard deviation: 4.385
Gender	Male: 39.1% (N=29) Female: 60.9% (N=45)
Campus location	Main campus: 85.7% (N=63) Satellite campus: 14.3% (N=11)
Type of behavior change	Positive: 46 Negative: 28

Table II: Pre-assessment vs. Post-assessment Empathy Score Paired t test Results

Variable	Min Score	Max Score Possible	Mean Score	Mean Difference	95% Confidence Interval		Standard Deviation of Difference	<i>t</i>	df	<i>p</i> -value
					Lower Limit	Upper Limit				
Pre-assessment score	15	105	82.081	-2.324	-4.094	-0.555	7.638	-2.618	73	0.011
Post-assessment score			84.405							

Table III: Assessment Score Descriptions

	Pre-assessment Score	Post-assessment Score
N of cases	74	74
Minimum	60	63
Maximum	101 (out of 105)	103 (out of 105)
Median	83.5	84
Mean	82.081*	84.405*
Standard deviation	8.514	8.819

*statistically significant differences

Logistic regression was completed on age, gender, the nature of behaviour change, and the location of the student, either main or satellite campus, to determine if any variable predicted a greater change in empathy. No individual variable was found to be statistically significant. Although not objective data, results from student reflections displayed increased understanding and empathy for patients making a behaviour change. Some comments from students included, *“this assignment will be a great asset in helping my patients make a behaviour change as I realised having a plan and good support system were the two biggest things that helped me”* and *“I now believe I can relate to patients on the psychological barriers, the planning that must take place, and the difficulty of trying to make a change even when it is for a health benefit”*.

Discussion

An assignment in behaviour change resulted in statistically significant increased pharmacy students' empathy scores. This is a noteworthy finding for multiple reasons. First, as previously stated, empathy levels are shown to decrease during most graduate healthcare curriculum, although varied results have been seen in pharmacy (Kaplan *et al.*, 1989; Stepan & Baernstein, 2006; Nunes *et al.*, 2011; Wilson *et al.*, 2012). This study was conducted in third year students, displaying that an increase in empathy can be effectively addressed in this part of the curriculum. Second, previous exercises in empathy often required extensive classroom time or use of resources, such as requiring students to watch videos or performances, or giving students a budget to grocery shop with (Chen *et al.*, 2008; Trujilo & Hardy, 2009; Fjortoft *et al.*, 2011; Van Winkle *et al.*, 2012). This activity was achieved with very little class time, including the assessments, less than thirty minutes were used. Third, previous studies were only able to relate an increase in empathy to a particular disease state, population subset, or socioeconomic disease state (Wilkes *et al.*, 2002; Chen *et al.*, 2008; Trujilo & Hardy, 2009; Manolakis *et al.*, 2010; Fjortoft *et al.*, 2011; Van Winkle *et al.*, 2012). The focus of empathy in this study was on the difficulties of changing behaviour. By allowing students to choose his or her behaviour change and not limiting the concept, the change in empathy may possibly be extended to a variety of disease states and populations that are attempting to promote healthcare treatment through changes in behaviour. This study also allowed for both positive and negative behaviour changes and as both positive and negative behaviour changes were found to have no difference on increasing empathy by logistic regression, this further states the future applicability. Fjortoft and colleagues showed that factors such as gender affect the empathy of certain individuals in pharmacy (Fjortoft *et al.*, 2011). The results of this study show that there were no differences in scores and no predictive value of age, gender, campus, or the nature of the behaviour change. Although the sample size is small, it is comparable to other studies and this is pertinent as approximately 60% of the population was female and

because there were no differences in gender results, the overall results are not skewed based on gender.

This study is applicable to other pharmacy programs as it is not topic specific and could be incorporated into various course curriculums. Although this study was completed in third year students, it is feasible to use in earlier years of the curriculum as disease state knowledge is not pertinent to complete the project. This study was completed at a university with a main campus and a satellite campus. As there was no difference in results between campuses, it could be completed at institutions with or without a satellite campus. Due to resources, previous studies have been completed in small populations such as those on clinical rotations, whereas the methods used in this study can effectively be utilised in larger populations. Ten days was chosen as the duration of the assignment based on a few factors. First, ten days is a significantly longer period than the majority of previous studies ranging just over a few hours. It also allowed students to make the change both over weekdays and a weekend. Most significantly, the behaviour change assignment and post assessment were both completed by the students before behaviour change techniques and benefits were discussed in class to avoid the classroom as a confounding factor for a change in empathy.

As this study was not centred on pharmacotherapy topics, it is reasonable that it would be applicable to other healthcare programs at the graduate level; however, the Kiersma-Chen Empathy Scale has only been validated in pharmacy and nursing students (Kiersma *et al.*, 2013). Future research could expand this to other healthcare profession programs as well as retesting the empathy scores several months out from the assignment to determine if the empathy change was sustained. Retesting was not possible at a later time due to the duration and timing of the course in this study. Further research also needs to establish whether empathy activities have a long term result.

This study has a few limitations. It was completed at one university and therefore, it is not certain the results can be repeated at other universities as changes in curriculum and student population may impact the results. Additionally, the individual score objectives on the survey tool were not evaluated for differences. Had this been done, it may have shown that only certain aspects of the scores improved. It was completed over a period of ten days, but longer term study was not completed at this time. Ten days is considerably longer than previous empathy studies, however, the optimal duration has not been determined and it is reasonable for behaviour change to take an extended period of time. While some studies have shown increases in empathy in the short term, more research needs to be completed to evaluate long-term results. The validated scoring tool has only been validated in pharmacy students at one university. Other validated survey tools used in larger populations could not be used in this study due to cost. In order to identify methods to effectively and efficiently increase or sustain student empathy throughout the duration of healthcare education, more research needs to be completed.

Overall, this study displayed a statistically significant increase in pharmacy students' empathy scores from a behaviour change assignment that did not differ based on age, gender, campus, or nature of behaviour change. This study further demonstrates that curriculum in graduate healthcare programs can be utilised to increase empathy in hopes of developing empathetic healthcare providers. It demonstrates that targeted approaches at behaviour change could be a beneficial addition to pharmacy, and possibly other healthcare, curriculums, specifically for its ability to increase empathy.

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