Empathy in UK pharmacy students: assessing differences by gender, level in the degree programme, part-time employment and medical status

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Abstract

Background: Empathy is an important aspect of patient–healthcare professional interactions.

Aims: To investigate whether gender, level in the degree programme, employment and health status affected empathy scores of undergraduate pharmacy students.

Method: All undergraduate pharmacy students (n=529) at Queen's University Belfast were invited via email to complete an online validated empathy questionnaire. Empathy scores were calculated and non-parametric tests used to determine associations between factors.

Results: Response rate was 60.1% (318/529) and the mean empathy score was 106.19. Scores can range from 20 to 140, with higher scores representing a greater degree of empathy. There was no significant difference between genders (*p*=0.211). There was a significant difference in scores across the four levels of the programme (*p*<0.001); scores were lowest at Level 1 and greatest at Level 4 (final year). There were no significant differences in scores for respondents who had a part-time job, a chronic condition, or took regular medication in comparison to those who did not (*p*=0.028, *p*=0.880, *p*=0.456, respectively).

Conclusion: A reasonable level of empathy was found relative to other studies; this could be further enhanced at lower levels of the degree pathway.

Keywords: *Empathy, Pharmacy, Questionnaire, Undergraduate*

Introduction

From a healthcare perspective, empathy has been defined as "predominantly a cognitive attribute that involves an understanding of patients' concerns, the capacity to communicate this understanding, and an intention to help" (Fjortoft *et al*., 2011, p.1). Showing empathy to patients may improve patient satisfaction (Zachariae *et al*., 2003; Kim *et al*., 2004) and contribute to optimal clinical outcomes (Beck *et al*., 2002; Neumann *et al*., 2007; Hojat *et al*., 2011). Empathy is important for patient safety by preventing possible harm that may result from unsuccessful communication (Nightingale *et al*., 1991; Halpern, 2003). Moreover, empathy has been considered as an essential part of professional competence (Epstein & Hundert, 2002) and an important attribute of professionalism (Brownell & Côté, 2001; Veloski & Hojat, 2006). It is, therefore, imperative for pharmacy schools to ensure their graduates are equipped with the empathetic communication skills they will need in their future careers. Indeed, the General Pharmaceutical Council [GPhC; the United Kingdom (UK) pharmacy regulatory and degree pathway accrediting body] expects pharmacy students to demonstrate the principles of professional behaviour and competence and to have effective communication with patients (General Pharmaceutical Council, 2010).

There are various methods to measure empathy (Mehrabian & Epstein, 1972; Davis, 1980) but one of the most frequently used validated instruments is the Jefferson Scale of Empathy (JSE) (Hojat *et al*., 2001) which has been translated into 49 languages (Thomas Jefferson University, 2015). The original scale was intended for use with doctors and healthcare professionals but it has since been modified to improve its face validity for administration to students. These modifications are minor, allowing for comparison to be made between studies using the original and modified instruments (Thomas Jefferson University, 2015). It has been shown to be a valuable metric of empathy among pharmacy students and nursing students (Ward *et al*., 2009; Fields *et al*., 2011; Fjortoft *et al*., 2011; Kiersma *et al*., 2013).

Empathetic ability among healthcare students appears to be affected by a number of factors. Studies involving medical students have found gender-related differences in empathetic ability (Hojat *et al*., 2001; Bellini *et al*., 2002; Austin *et al*., 2007; Hegazi & Wilson, 2013). Other work has revealed that empathic ability may be influenced by age (Boyle *et al*., 2010; Fields *et al*., 2011), year of study (Hojat *et al*., 2004; Sherman & Cramer, 2005; Austin *et al*., 2007; Chen *et al*., 2007; Hojat *et al*., 2009; Wilson *et al*., 2012; Lim *et al*., 2013) and speciality interest

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(Tavakol *et al.*, 2011). Additionally, a meta-analysis of 30 years' worth of data (1979-2009) revealed that college students in America have decreased empathic ability compared to those from past generations (Konrath *et al.*, 2010, p.187) which may also impact on empathy levels of students in higher education. The authors concluded that changes within society affected empathy and that young adults nowadays represented "one of the most self-concerned, competitive, confident, and individualistic cohorts in recent history."

This study adds to the field because although some countries have measured empathy among students from various healthcare related disciplines, the measure of empathy among UK pharmacy students remains under-reported in pharmacy literature. The benefits of empathy have been previously outlined; embedding empathy skills within pharmacy education curricula may raise the standard of patient care provided by pharmacists in the future. Hence, investigating the empathetic ability of pharmacy students is important. This paper presents the results from a cross-sectional study conducted in the UK that explored the relationship between undergraduate pharmacy students' empathy scores in relation to gender, level in the degree programme, part-time employment status and medical status. Furthermore, to the best of our knowledge, no work to date has analysed empathy scores in pharmacy students with regard to part-time employment and medical status. Part-time employment among university students in the UK has increased markedly over the past number of years. A recent survey found that 77% of students work part-time to help fund their studies (Endsleigh, 2015). Work experience may lead to the development of "soft skills" such as working in a team and improved communication (The Institute of Engineering and Technology, 2015). We therefore postulated that part-time employment may improve empathy scores of students. Furthermore, we hypothesised that the medical status of students may affect their empathy scores, as previous work with pharmacy students revealed that using multiple placebo medicines over a six day period helped them foster empathy towards patients taking complex medication regimens (Ulbrich *et al.*, 2012).

The overall aim of this study was to investigate and assess the factors affecting the empathetic ability of undergraduate pharmacy students. The objectives were to:

- Determine the empathy scores of undergraduate pharmacy students;
- Ascertain if there were differences in students' empathy scores between (a) gender (b) levels in the degree programme;
- Establish if students' empathy scores were affected by (a) part-time employment status (b) having a chronic medical condition.

Methods

The School of Pharmacy Ethics Committee at Queen's University Belfast (QUB) approved the proposed research (Ref 010PMY2014; Feb 7, 2014). Data were collected using an electronic questionnaire created using the survey website SurveyGizmo™ (SurveyGizmo, Boulder, Colarado; www.surveygizmo.com). The Jefferson Scale of Empathy-Healthcare Professional Students (JSE-HPS) version was used to measure empathy. The JSE-HPS is a self-administered instrument with 20 items scored on a 7-point Likert scale (1=strongly disagree to 7=strongly agree). There are ten negatively worded items which are reverse-coded when scored. Higher scores represent a greater degree of empathy; scores can range from 20 to 140. Hojat *et al.* (2001) reported that the psychometric properties of this scale were satisfactory. Permission was obtained from the Jefferson Medical College of Thomas Jefferson University Center for Research in Medical Education and Health Care (Thomas Jefferson University, 2014). All necessary guidance was adhered to when designing the questionnaire, including question order. The questionnaire for this study consisted of two sections. Section A (n=20 questions) was the JSE-HPS validated questions and Section B (n=4 questions) related to student demographic information (but no identifiable information) relating to gender, pharmacy year, employment and health status. Students were asked about part-time employment and subsequently provided with three options and accompanying explanations. The first was 'customer-facing' (this includes working in a retail environment and having regular interactions with customers). The second was 'patient-facing' (this includes working in a healthcare setting such as a community pharmacy and having regular interactions with patients) and the third was a free response ('other'; please specify). In terms of health status, students were asked whether they had been diagnosed with a long-term medical condition (and told this may also be known as a chronic condition) and given the following examples: asthma, diabetes, and inflammatory bowel disease. As part of this question, students were also asked whether the condition required them to take regular medication and provided with examples (daily use of inhalers or insulin). We deliberately chose example conditions and medications that would realistically be appropriate for a student population.

The study population was all students enrolled on the Master of Pharmacy degree program at QUB (n=529). Postgraduate pharmacy students (n=10) piloted the questionnaire and ensured it could be completed within seven minutes and that questions were clear and unambiguous. In February 2014, students were invited via email to participate *i.e.* a census approach was used. Students had fourteen days to complete the questionnaire and the deadline was outlined in the invitation. The email contained a unique software-generated link to the questionnaire which enabled each student to complete the questionnaire once only (all data collected contained no identifiable information). Students were told that participating in the study was voluntary. The original email invitation was followed up with two reminders which were sent to non-respondents and included a statement that other students had already responded (Edwards et al., 2009). Additionally, to maximize the

response rate, an incentive (of being entered into a draw for one of twenty copies of a recommended textbook) was mentioned in the invitation (Edwards *et al*., 2009).

Responses were coded and entered into Microsoft Excel® before conducting statistical analysis using R. Calculating empathy scores and the handling of missing data were done in accordance with the algorithm provided by Jefferson Medical Centre. Comparisons of mean empathy scores were conducted by gender, pharmacy year, part-time employment, and health status. Mann-Whitney U and Kruskall-Wallis tests were used to examine relationships between mean scores (after the Sharipo-Wilk test confirmed the data were not normally distributed). An a priori level of less than 0.05 ($p<0.05$) was set as significant. Reliability of the JSE-HPS was measured using the Cronbach alpha where a coefficient alpha of 0.8 or greater was considered indicative of good reliability (Cortina, 1993).

Results

A response rate of 60.1% (318/529) was obtained. It should be noted that the number of respondents (n=318) relates to students who fully completed the questionnaires. Another 25 questionnaires were only partially completed and, in accordance with the JSE-HPS algorithm, were not included in the analyses.

There were fewer male than female respondents [95/318 (29.9%) males; 223/318 (70.1%) females] but this was similar to the population of students enrolled on the pharmacy degree program [186/529 (35.2%) males and 343/529 (64.8%) females]. Response rates for first to fourth year (*i.e.* Levels 1 to 4) were 43.8% (49/112), 55.9% (76/136), 69.6% (103/148) and 67.7% (90/133), respectively. There was a significant difference in the response rates between the levels ($\chi 2=22.238$, d.f.=3, $p<0.05$), with Level 4 students most likely to respond.

Empathy scores

Table I provides information on the descriptive statistics for the JSE-HPS. Scores can range from 20 to 140; higher scores represent a greater degree of empathy.

Table I: Descriptive statistics for the JSE-HPS questions (n=318 pharmacy students)

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Mean empathy score (SD)	106.19 (11.81)
25th percentile score	99
50th percentile (median) score	106
75th percentile score	114
Possible score range	20-140
Actual score range	49-133
Alpha reliability coefficient	0.81 (0.70 for the 10 reverse scoring items; 0.81 for the 10 normally scored items)
Shapiro-Wilk normality test	W=0.9787; $p<0.001$

Empathy scores by gender

The mean empathy score for females was slightly higher than the mean score for males, however the difference was not statistically significant (see Table II).

Empathy scores by pharmacy year

Mean empathy scores were significantly higher for respondents in higher levels/pharmacy years (see Table II); the highest score was found at Level 4 and lowest score at Level 1. Figure 1 provides further information relating to pharmacy year and empathy scores.

Figure 1: Box-and-Whisker plot of Empathy Scores by Pharmacy Year
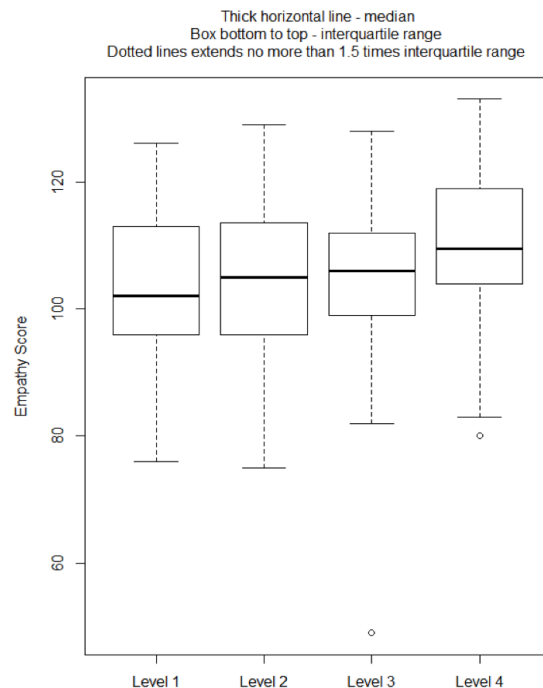
Empathy scores by part-time employment status

The mean empathy score for students with a part-time job was marginally higher than those without, however, there was no significant difference between the two groups (106.89 versus 104.12; $p=0.028$). There was no significant difference in mean empathy scores between the different types of part-time jobs, but patient facing jobs had the highest mean empathy score (see Table II).

Empathy scores by health status

There was no significant difference in mean empathy scores between respondents who had a chronic medical condition and those who did not (see Table II). The mean empathy scores for respondents using regular medication was lower than students who were not using regular medication, however there was no significant difference between the two (see Table II).

Table II: Mean empathy scores and comparisons in relation to demographic characteristics

	Mean empathy score	SD	*p* value
Gender			0.211
Male (n=95)	104.96	12.39	
Female (n=223)	106.71	11.54	
Pharmacy year			<0.001
Level 1 (n=49)	103.29	12.07	
Level 2 (n=76)	104.13	12.22	
Level 3 (n=103)	105.52	11.32	
Level 4 (n=90)	110.26	10.93	
Part-time employment status			0.118
Customer-facing (n=78)	105.97	12.86	
Patient-facing (n=149)	107.49	11.02	
Other type (n=10; includes cleaning, cooking and clerical work)	105.10	11.90	
No part-time employment (n=81)	104.12	12.03	
Health status			0.880
Chronic condition (n=56)	106.64	11.85	
No chronic condition (n=262)	106.09	11.82	
Medication			0.456
Regular medication (n=35)	104.74	11.86	
No regular medication (n=283)	106.36	11.81	

Discussion

This study has revealed some interesting findings about empathy among pharmacy students. The mean empathy score of 106.2 may be considered reasonable, in light of other findings. Several UK studies involving medical students assessed empathy using the Jefferson Scale of Physician Empathy (*i.e.* before the healthcare student version of the instrument existed) and stated mean scores of around 80 (Austin *et al.*, 2005; Austin *et al.*, 2007). However, other researchers who conducted work in the United States of America reported higher figures. For example, Sherman and Cramer (2005) assessed empathy of dental students (n=130), using the Jefferson Scale of Physician Empathy, and reported a mean empathy score of 117.7. Fields *et al.* (2011) established empathy levels of nursing students (n=265) while Fjortoft *et al.* (2011) did the same with pharmacy students (n=187), via the JSE-HPS instrument, and reported mean empathy scores of 111.5 and 110.7, respectively. These differences in scores may be related to dissimilar amounts of clinical exposure throughout undergraduate courses, to varying teaching methods employed or cultural differences. There are limited studies that compare empathy scores for students from various disciplines. One such study conducted in Australia by Boyle *et al.* (2010) found no significant difference in levels of empathy across six different programs (emergency health, nursing, midwifery, occupational health, physiotherapy and health science) whereas Wilson *et al.* (2012) reported that UK pharmacy and nursing students were more empathetic than law students. While we have described our score as 'reasonable' relative to other work, the literature does not provide an optimal value of empathy for healthcare students or professionals with regard to the JSE-HPS scale. Furthermore, optimal levels of empathy may vary for different healthcare practitioners. Pharmacy students do not typically experience clinical exposure or patient encounters to the same extent as nursing, dentistry or medical students. This may be related to the conventional role of the pharmacist being considered more technical than patient-orientated. However, with more patient-facing responsibilities such as independent prescribing, greater levels of empathy are now required from pharmacy graduates than was previously the case.

A significant difference in empathy was found between the year groups with empathy increasing at higher levels of the degree pathway. These findings are in opposition to other work where empathy scores declined as students progress through medical and dental school (Hojat *et al.*, 2004; Sherman & Cramer, 2005; Austin *et al.*, 2007; Chen *et al.*, 2007; Hojat *et al.*, 2009; Wilson *et al.*, 2012; Lim *et al.*, 2013) but such findings have been challenged by other researchers (Austin *et al.*, 2005). It has been suggested that a decline in empathy could be linked to increasing clinical responsibility or patient contact with altruistic values being replaced with elitism and cynicism (Boyle *et al.*, 2010; Colliver *et al.*, 2010). However, clinical responsibility and patient contact increase in frequency and duration within the pharmacy degree yet these factors do not seem to negatively affect empathy levels of students. Hong *et al.* (2012) and Costa *et al.* (2013) also found that clinical experience did not negatively affect student empathy.

The difference in empathy scores between genders was not significant in our study, although, on average, females did score higher than males. Likewise, Van Winkle *et al.* (2012) demonstrated that while female medical students had a higher level of empathy than males, there was no significant difference between genders. Furthermore, a study involving nursing students reported a lack of significant difference in empathy scores between genders (McKenna *et al.*, 2012). Other work has shown that female pharmacy and medical students were significantly more empathetic than their male counterparts (Ward *et al.*, 2009; Fjortoft *et al.*, 2011; Tavakol *et al.*, 2011). Klein & Hodges (2001) consider that gender differences in empathy levels are not because of differences in ability between men and women. They believe that greater empathetic ability can be achieved by virtually anyone who is given the correct motivation. In this current study, there was a steady increase in empathy levels of male students as they progressed through the course. Conversely, the scores for females did not follow the same linear configuration as they dropped at Level 3 and subsequently increased again at Level 4. This is consistent with a longitudinal study conducted by Costa

et al. (2013) where the decrease in empathy in females was attributed to gender-specific personality characteristics such as anxiety and stress during transition periods in the course from preclinical to clinical training. Perhaps this applies to the female respondents in our study given that there is an increase in clinical and practice workload between Levels 2 and 3.

With regard to part-time employment, there was no significant difference in scores between students who had a part-time job and those who did not, although mean scores were higher for those in part-time employment than those not in employment. Additionally, students who reported having a patient-facing job had a marginally higher mean score than those with a customer-facing job. These findings are important as they suggest that students who have a greater extent of patient exposure are not negatively influenced by patient contact.

Less than a fifth of respondents reported having a chronic medical condition. There was very little difference in empathy with this group in comparison to students who did not have a chronic medical condition. Our findings were unexpected; it was predicted that students who suffered from a chronic medical condition would be more empathic to others. Chen *et al.* (2008) considered that educational strategies (such as simulating patients with multiple chronic conditions) were successful at increasing empathic ability in pharmacy students. However, it is difficult to adequately compare this short-term modelling experiment with a real life situation and is therefore an area in which further research is warranted.

Just under two thirds of respondents with a medical condition reported using regular medication. Although there was no significant difference between students using regular medication and those who did not, students who did not use regular medication had a higher mean empathy score than those who did use regular medication. These results were, again, unexpected as it was postulated that students who required regular medical treatment would have greater empathy. As previously noted, Ulbrich *et al.* (2012) conducted a study whereby pharmacy students used multiple placebo medications over a six-day period. Eighty-nine percent agreed or strongly agreed that it was a valuable experience to help foster empathy towards patients taking complex medication regimens. Perhaps the reverse is also plausible: if a person has to take medication(s) regularly on a long-term basis, then they have an equal expectation of others who are in a similar situation. Clearly the ability of pharmacists to adequately empathise with patients on complex or multiple medication regimens is vital.

In terms of limitations, firstly, questionnaires provide an insight into respondents' intended rather than actual behavior and respondents are also self-reporting the data. Secondly, the study was conducted in one pharmacy school in the UK, therefore the results may not be generalizable to other areas of the UK or other parts of the world. Thirdly, there was an underrepresentation of Level 1 and 2 students and non-response bias cannot be ruled out. This may be because students in lower levels perceive empathy to be of limited importance, or may be due to a greater degree of apathy among these students regarding involvement in academic research. However, the overall response rate of 60.1% was considered satisfactory (Babbie, 2007) particularly in light of guidance from Fincham (2008, p.1) who stated that "response rates approximating 60% should be the goal of researchers", (he also provided higher response rate targets for other types of research). It is anticipated the research will be valuable to educators (undergraduate and postgraduate) of various healthcare disciplines as it provides new information on pharmacy students within the UK, and how factors such as gender, level in the degree programme, part-time employment and health status influence empathy.

In conclusion, empathy is an important attribute for pharmacy students to acquire during their education, especially given expectations for pharmacists to undertake more patient-facing roles. In this study, empathetic ability could be further enhanced by using appropriate education strategies particularly at lower levels of the degree pathway. The health status of pharmacy students had no significant effect on empathy and it would be timely to conduct qualitative work to explore this area further. Additionally, to the best of our knowledge, in addition to health status, the influence of part-time employment (and type) has not previously been investigated with regard to empathy. Despite reports that empathy declines throughout healthcare professional education, this study has demonstrated that empathy can be maintained and enhanced during the education of pharmacy students and that gender does not play a significant role in empathetic ability.

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