

Gender related changes of empathy level among Polish dental students over the course of training

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Abstract

The appropriate approach to dental patients, developed during the course of dentists' training, is a prerequisite for the holistic treatment of patients. Empathy is an important component of such an approach. This study aimed to determine the levels of empathy among students of dentistry at different stages in their training.

The Jefferson Scale of Empathy – Health Profession Students Version was used to conduct the research, and 100 dental students (66 female and 34 male) ranging from first to fifth year participated in the survey. The scale contained 20 questions, with a possible score interval between 20 and 140. A higher score indicates increased ability to express empathy.

The level of empathy among dentistry students increased from the first and second to fourth years, where it reached its maximum. During the fifth year, a decrease in levels of empathy was observed.

The increase in empathy during the dental course may be correlated with the growth of clinical practice during the subsequent years of study. A slight decrease in empathy in the fifth-year students may be due to the curricular focus on performing procedures, with students having to meet a set target in order to finish the course.

Abbreviations: CC = compassionate care, JSE-HPS = Jefferson Scale of Empathy – Health Profession Students Version, PCC = patient-centered care, PS = walking in patient's shoes, PT = perspective taking, SD = standard deviation.

Keywords: empathy, Jefferson Scale of Empathy, patient-centered healthcare, students

1. Introduction

The fear of visiting a dentist affects as much as 36% of the UK population, with the dentophobia rate in Western countries reaching 2.7% in men and 4.6% in women. Some studies suggest that extreme dentophobia may affect up to 12% of the population, ultimately affecting patients' dental health. Dentists' introspective capacity plays an important role in reducing patient anxiety.^[1,2] The ability to establish proper patient relationships partly demonstrates the clinician's level of professionalism, along with accuracy and responsibility, and contributes to gaining the patient's trust.^[3,4] Empathy is vital to this process.

Empathy can be defined as the ability of an individual to understand the internal experiences of another individual and to

respond appropriately.^[5] The Jefferson Medical College's definition of empathy locates it in the context of patient care: empathy is a cognitive attribute in which the ability to understand the patient's experiences is combined with the ability to communicate that to the patient.^[6] Opinions on the stability of empathy are divided, with some believing that it is an unchanging trait determined by genetics and early childhood experiences, while others posit that empathy changes over the course of a lifetime, influenced by life experiences.^[7,8]

Studies have demonstrated the usefulness of empathy in clinical practice. Doctors characterized as having empathetic communication skills, for example, showed greater diagnostic accuracy, while their patients were more satisfied with the service, showed less anxiety, and were able to adhere to treatment guidelines.^[5,9,10] Another study showed that dental students' empathic abilities are a predictor of students' later clinical outcomes.^[11]

Polish dental training takes the form of a 5-year course. The first year comprises mainly theoretical classes, while second-year students start performing dental procedures on cadavers. From the third year, students start practicing on patients, performing mainly restoration of caries cavities. From the fourth year, clinical practice dominates the curriculum, with students performing more complex treatments such as endodontic therapy and extractions. Throughout the course, students must develop the necessary skills to perform a set number of procedures from each dental discipline; in the fifth year, the focus is on the completion of a set number of procedures.^[12,13]

2. Objective

The aim of the study was to assess the level of empathy among Polish dental students at various points in their training, based on their gender.

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3. Materials and methods

The research was conducted at the Department of Conservative Dentistry with Endodontics at the Medical University of Silesia in Bytom. A total of 100 first- to fifth-year students attending a dental course participated (66 women and 34 men) in the study. The 20-item Jefferson Scale of Empathy – Health Profession Students Version (JSE-HPS) was used to conduct the research. Ten items are positively worded and 10 are negatively worded. Participants provided responses based on a seven-point Likert scale (1 = strongly disagree; 7 = strongly agree). Extensive review of literature is the basis for the structure of the JSPE. The factor analytic methods have been used to confirm, among medical students, medical residents, and physicians construct validity of the scale.^[14,15] Internal consistency of items (coefficient alpha) was 0.89, 0.87, and 0.81 among medical students, medical residents, and physicians, respectively.^[16] The score interval is between 20 and 140, with higher scores indicating higher ability to express empathy.

For statistical analysis, participants were divided into groups based on their level of study; 37 first- and second-year students (23 female and 14 male) formed the first group; the second group comprised 23 third-year students (14 female and 9 male); 19 fourth-year students (14 female and 5 male) formed the third group; and 21 fifth-year students (15 female and 6 male) made up the final group. Statistical analysis was conducted using Statistica V 9.0 (MUS, Katowice, Poland). Results are presented as mean and standard deviation (SD). Differences between groups were analysed with the Student *t* test (for independent variables), Mann–Whitney *U* test, ANOVA (one-way analysis of variance). A value of $P < .05$ was considered statistically significant. Items were assigned to 3 groups: perspective taking (PT; items 2,4,5,9,10,13,15,16,17,20); compassionate care (CC; items 1,7,8,11,12,14,18,19); and walking in patient's shoes (PS; items 3,6).

The study received ethics clearance from the Ethics Committee of Medical University of Silesia (KNW/0022/KB1/79/18 from 16.10.2018). The described experience is an important element of

a larger project, which aims to analyze and evaluate graduation and stress levels among students, academic teachers, and practitioners, depending on the environmental factors of knowledge and experience, implementation of security systems, and compensation tools. This wide-ranging project required the approval of the appropriate bioethical commission to prevent potential undesirable manipulative activities, due to its interference with sensitive data.

4. Results

The Cronbach alpha internal consistency was 0.73 for PT group and 0.68 for CC + PS groups together (in PS group there were only 2 items. Hence, proper calculation of Cronbach alpha coefficient is impossible). The results obtained from first- to fifth-year students are presented in Table 1.

The highest average of empathy level was characteristic for the fourth year students. However, there were no statistically significant differences between particular students' groups.

For men between their first and second years of study, or in their fifth year, a statistically significant difference, concerning one-way analysis of variance by ANOVA test, was observed in the PT set of questions ($P = .04$) and in case of empathy as a whole ($P = .02$). For the group of men in the case of empathy as a whole multiple comparisons were made NIR test (least significant difference (LSD)). The results were distinguished by pairs of averages that were statistically significantly different: pair "1 and 2" compare to "4" ($P = .01$), "1 and 2" compare to "5" ($P = .02$), "3" compare to "4" ($P = .03$) or the results were approximated to statistical significance, as in the case of pair: "3" compare to "5" $P = .07$. In the case of PT where $P < .05$ ($P = .04$), multiple comparisons made by NIR test revealed pairs of average that were statistically significantly different: "1 and 2" compare to "3" $P = .03$ or the results were approximated to statistical significance "1 and 2" compare to "4" $P = .07$, "1 and 2" compare to "5" $P = .01$ (Table 1 and Fig. 1).

Table 1
Empathy level depending on the year of study.

	Years				<i>P</i>
	1st and 2nd n = 37	3rd n = 23	4th All n = 19	5th n = 21	
Empathy	86.65 (9.39)	87.61 (8.84)	91.42 (10.79)	90.24 (11.69)	.30
Perspective taking	50.19 (7.00)	53.65 (6.51)	52.89 (6.97)	54.62 (5.97)	.07
Compassionate care	28.14 (6.08)	25.39 (5.11)	29.53 (8.51)	26.95 (8.77)	.26
Walking in patient's shoes	8.32 (2.47)	8.57 (1.67)	9.00 (2.11)	8.67 (2.92)	.78
	Female				
	n = 23	n = 14	n = 14	n = 15	
Empathy	87.70 (11.06)	88.29 (9.76)	89.5 (11.47)	88.47 (10.25)	.97
Perspective taking	51.65 (7.65)	53.93 (7.29)	52.79 (6.90)	54.47 (6.38)	.64
Compassionate care	28.30 (6.96)	25.43 (5.46)	28.07 (8.52)	25.40 (8.91)	.52
Walking in patient's shoes	7.74 (2.54)	8.93 (1.90)	8.64 (2.34)	8.60 (2.72)	.46
	Male				
	n = 14	n = 9	n = 5	n = 6	
Empathy	84.93 (5.64)	86.56 (7.60)	96.80 (6.83)	94.67 (14.81)	.02
Perspective taking	47.79 (5.16)	53.22 (5.45)	53.20 (7.98)	55.00 (5.33)	.04
Compassionate care	27.86 (4.52)	25.33 (4.85)	33.60 (7.86)	30.83 (7.76)	.07
Walking in patient's shoes	9.29 (2.09)	8.00 (1.12)	10.00 (0.71)	8.83 (3.65)	.35

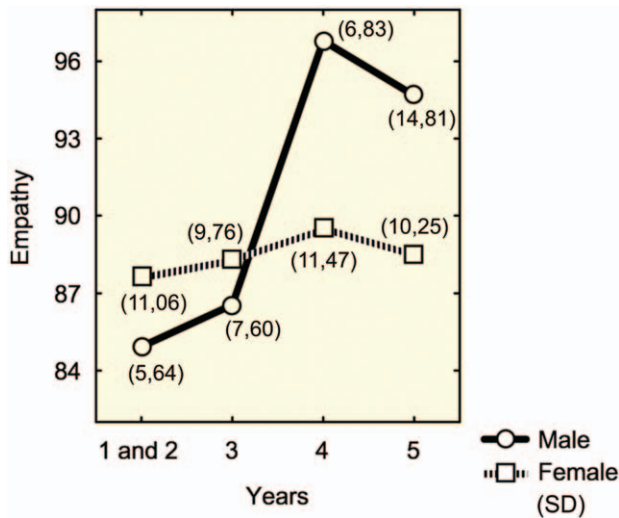


Figure 1. Gender differences in empathy levels, depending on year of study.

The analysis of the results obtained from a group of fifth-year students proved that there was a statistically significant difference between men and women in their ability to feel empathy, without distinction to groups of answers ($P = .02$). After the distinction was made, men were observed to feel more empathy again; however, there were no statistically significant differences. The average values and standard deviations of the results for women and men depending on the year of study made by Student *t* test for independent variables are presented in Table 2.

After the groups depending on men and women were distinguished, it was possible to observe differences for answers to the questions in PS set with the tendency towards statistical significance ($P = .06$). After the groups depending on year of study were divided into females and males, there was no statistically important significance observed in women. All women that took part in the study were characterized by the similar level of empathy. Men were a homogenous group. The statistical significance was observed in feeling the empathy as an aggregated value of answers to all the questions without division into particular sets of questions as well as after division of the questions to PT, CC, PS sets. All groups of the fifth-year students were characterized by the lowest level of empathy.

5. Discussion

Sherman's and Cramer's^[17] studies have found dental students' empathy levels to be highest in their first year, followed by a significant decrease over subsequent years. This is in contrast to our results, which showed higher level of empathy among students in their later years of study. Kataoka et al^[6] further found significantly higher levels of empathy among female than male students, again contradicting our findings, as well as that of Beattie et al.^[18] It is worth emphasizing that level of empathy among male students during dental coursework has increased at a higher rate than that of the female students. This phenomenon was also observed by Beattie et al.^[18] A larger increase in empathy among male subjects in their earlier studies may be caused by a lower initial level of empathy compared to that of the women.

Table 2
Empathy level between female and male depending on the year of study.

	Female		Male		P
	Years 1 and 2		Years 1 and 2		
	n = 23		n = 14		
Empathy	87.70 (11.06)		84.93 (5.64)		.32
Perspective taking	51.65 (7.65)		47.79 (5.16)		.07
Compassionate care	28.30 (6.96)		27.86 (4.52)		.81
Walking in patient's shoes	7.74 (2.54)		9.29 (2.09)		.06
	Year 3		Year 3		
	n = 14		n = 9		
Empathy	88.29 (9.76)		86.56 (7.60)		.65
Perspective taking	53.93 (7.29)		53.22 (5.45)		.80
Compassionate care	25.43 (5.46)		25.33 (4.85)		.97
Walking in patient's shoes	8.92 (1.90)		8.00 (1.12)		.20
	Year 4		Year 4		
	n = 14		n = 5		
Empathy	89.50 (11.47)		96.80 (6.83)		.20
Perspective taking	52.79 (6.90)		53.20 (7.98)		.91
Compassionate care	28.07 (8.52)		33.60 (7.86)		.22
Walking in patient's shoes	8.64 (2.34)		10.00 (0.71)		.07
	Year 5		Year 5		
	n = 15		n = 6		
Empathy	88.47 (10.25)		94.67 (14.81)		.28
Perspective taking	54.47 (6.38)		55.00 (5.33)		.85
Compassionate care	25.40 (8.91)		30.83 (7.76)		.20
Walking in patient's shoes	8.60 (2.72)		8.83 (3.66)		.87

The increase in empathy levels among our participants corresponds to the findings of Beattie et al,^[18] from the UK, where empathy levels after clinical exposure were higher than before exposure. In Polish dental education, patient interaction starts in the third year, which may explain the empathic peak they reach in fourth year. That may suggest that introducing appropriate changes in education programs may prevent a decline in empathy during the course of teaching.

Holistic detail training is demanding, especially considering the extent of the dentist's work area, which is limited to the head and neck. Further, the emphasis is mainly on skills training, with a narrow or completely neglected focus on the development of interpersonal skills. Rosenzweig et al^[19] developed a course for dentistry students aimed at increasing overall patient focus through patient-centered care (PCC). While their original findings did not indicate a significant difference between those who completed the PCC course and those who did not, completion of the course did predict a smaller decrease in empathy over time.^[19]

Also using the JSE-HPS, Aggarwal et al^[20,21] noted a gradual decrease in empathy during the course of dental studies – with the highest level of empathy reached by the first-year students and the lowest by students in their fourth year. An even lower empathy level was recorded among interns. The lack of differences in empathy levels between women and men in our study, in comparison to the findings of Aggarwal et al,^[20,21] may be caused by the cultural differences involved in raising young people. However, in studies on the level of empathy among students of dentistry conducted in countries with similar cultural conditions to Poland, such as France or Canada, there were also gender differences in levels of empathy in a given year. Previous research also showed significant differences in the level of empathy between women and men, with women obtaining significantly higher levels of empathy.^[20,21]

Schwartz and Bohay^[13] carried out a study in which level of empathy among dental students was compared before and after a specially created video course on pain. Empathy levels were significantly higher after the course (third-year level) than before (second year). In order to prevent loss of empathy among fifth-year students, a similar course could be developed and implemented. Following on the results achieved by Nelson et al,^[11] the introduction of empathy courses for first-year students may also improve their future clinical efficiency.

In the later stages of the project, the attention of the authors will be focused in particular on determining the initial level of stress in women and men, as well as the realities of individual procedures and didactic or clinical tasks determined by the subsequent stages of training. The impact of factors outside the spectrum of education (e.g., family and financial situation, which can reduce or increase stress levels) will also be assessed. The authors take into account the fact that women students pay more attention to and take care of the theoretical foundations of the dentistry profession, which may result in a better use of their theoretical knowledge and emotional control strategies in the first clinical contacts with patients.^[14,17] However, it is confirmed that after several years of working life, the situation is reversed.^[15] Women are more sensitive, sympathetic, and supportive of patients, which means that they are more stressed by the end of their working lives.^[21] Women dentists have an impact on patients due to their high level of emotional feelings and more subtle moods, especially when they feel patients'; pain or fear

difficult or demanding dental practices. As a result, it causes mental disorders stress in women dentists.

6. Conclusions

Year of dental study does affect the empathy's expression at group of the male students between first and second years or in their fifth year of study. The level of empathy among dental students increases during the dental course, reaching its highest level among fourth-year students. This increase may be the result of the intensification in clinical activities in comparison to the third year of study. The decrease in empathy among fifth-year students may be caused by the objectification of the patient due to the number of procedures that fifth-year students need to perform to complete their training.

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