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Research paper

The analysis of the empathy factor in students of medical sciences

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Abstract

Introduction: Many research projects identify empathy as one of the most important factors necessary for efficient cooperation with patients. For that reason, nowadays, students of medical schools are more often offered access to training, which helps them to develop empathic communication.

Aim: The aim of our research was to compare empathy scores of students of medical sciences in Poland against those of students from outside of our system of education.

Material and methods: In our study, the sample included 536 students from the Medical University of Gdańsk. The participants filled in Baron–Cohen's Empathy Quotient (EQ) – 40 questionnaire and another one, concerning data on demographics. To analyse dependence between discrete variables and statistical heterogeneity of groups, we applied Pearson's χ^2 test and analysis of variance.

Results and discussion: The results revealed a correlation between female sex and the value of empathy score ($\chi^2 = 86.781$, $df = 55$, $P = 0.004$). Female students of nursing and obstetrics had the highest average empathy score (EQ = 49.3), which was followed by the students of physiotherapy (EQ = 47.1). Male students of pharmacy had the lowest score (EQ = 44).

Conclusions: The findings of our study confirm a connection between sex and level of empathy. Majority of students of those specialisations we researched (61%) had an average level of empathy (class II EQ = 33–51). We did not reveal dependence between the year or the mode of study and the EQ.

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1. INTRODUCTION

Empathy is one of the most important skills in interpersonal relations between medical professionals and patients.[1] Reports point at the empathic models of communication as the most efficient forms of acquisition of medical information. Such mode of interaction translates into more effective diagnostic process, and, as such, has a noticeable impact on therapy.[2,3] Results of studies also confirm that lack of empathy on the part of medical professionals is one of the most important factors determining patient dissatisfaction, which, in turn, leads to patients being less inclined to follow therapeutical recommendations.[4]

Arguments illustrating efficiency of the empathy-based communication are so numerous that some medical schools made attempts to assess the levels of empathy of candidates who applied to enrol with them.[1] This is an important aspect of candidate selection, especially in the light of results of many studies, indicating that the empathy levels in students of medical schools decline over time.[5–7]

Within the Polish system of education, individuals who seek to enrol on a higher education course must achieve a certain grade at a state examination or pass a test for candidates, or do both. In each case, it is the knowledge of the candidates that is evaluated. Neither case involves psychometric testing. We believe it would be interesting to compare the rates of empathy found in students in Poland against those of students who trained within other systems of education.

2. AIM

The first aim of our study was to evaluate and compare the levels of empathy among the students of various medical science courses. The second one was to compare the distribution of the levels of empathy in relation to the duration of the course.

3. MATERIAL AND METHODS

The study was carried out between November 2017 and June 2018. At that time, students enrolled on courses ran by the Department of Social Medicine and Social Pathology at the Medical University of Gdansk were given information about the project and an opportunity to take part in it on an anonymous and voluntary basis. The sample included 536 students of medical sciences from the Medical University of Gdańsk; 518 completed questionnaires were analysed (Table 1). Participants filled in the Baron–Cohen's Empathy Quotient questionnaireconsisting of 40 diagnostic questions (EQ-40), which was psychometrically tested[8,9] and also translated into Polish.[10] Respondents provide answers using a 4-point Likert scale. It is necessary to answer all the questions. Maximum possible result equals 80 points, very high result equals 64–80 points, higher than average result equals 52–63 points, average result equals 33–51 points and low result equals 0–32 points. Apart from the EQ-40 test we also included, on a separate sheet, 8 questions regarding socio-demographic characteristics of the participants.

The results were processed using Statistica 13.1 software. As for numerical data, we analysed the mean and standard deviations (SD). Categorical data were analysed through distribution of density. To analyse dependencies between discrete variables and statistical heterogeneity of groups, we used Pearson's χ^2 test with $P < 0.05$ as statistically significant. To observe averages between groups, we analysed variance.

4. RESULTS

Distribution of data revealed a higher average level of EQ for females and statistical significance between acquired score and female sex ($\chi^2 = 86.781$, $df = 55$, $P = 0.004$). Female students of nursing and obstetrics had the highest average score ($n = 56$, 49.3%, SD 8.6), while the male students of pharmacy had the lowest average score ($n = 16$, 38.6%, SD 10.5). Analogical results were found when specialisation was used as the criterion (Table 2). We found no correlation between the EQ score of the 1st year students and students of the subsequent years ($P = 0.494$). We did not find a connection between the level of EQ and the mode of study ($P = 0.383$).

According to the division of EQ scores suggested by Baron–Cohen, we assumed that class I will include EQ scores of 0–32 points, class II 33–51 points, class III 52–63 points and class IV 64–80 points.[10] Following that set of criteria, scores of most participants (60.8%) were located within the II class.

Table 1. Characteristics of the respondents.

Participants	*N*(%)
Sex	
Female	369(71.2)
Male	149(28.8)
Age	
18-20	286(55.2)
21 - 23	172(33.2)
<24	60(11.6)
Field of study	
Medical	206(39.8)
Nursing and obstetrics	56(10.8)
Physiotherapy	125(25.1)
Pharmacy	131(25.3)
Year of study	
1st	323(62.4)
2nd	60(11.6)
3rd	34(6.5)
4th	93(18.0)
5th	8(1.5)
Mode of study	
Stationary	438(84.6)
Extramural	80(15.4)

Table 2. Distribution of results.

Field of study	*N*	Mean	Median	Minimum	Maximum	SD
Medical	206	44.6	45	13	69	10.4
Females	112	46.4	47	13	69	10.4
Males	94	42.5	43	18	66	10.0
Nursing and obstetrics (females)	56	49.3	50	26	72	8.6
Physiotherapy	125	47.1	47	16	75	9.7
Females	89	49.4	48	29	75	8.3
Males	36	41.5	41	16	59	10.7
Pharmacy	131	44.0	45	15	64	9.4
Females	112	44.9	45	15	64	9.0
Males	19	38.6	38	24	58	10.5
Total	518	45.5	46	13	75	9.9
Females	369	47.1	47	13	75	9.4
Males	149	41.7	43	16	66	10.2

Table 3. Comparison of EQ results between sexes and empathy classes.

Field of study	Class I	Class II	Class III	Class IV	Total
Medical	26(12.7)	123(60)	53(25.8)	3(1.5)	206(100)
Females	9(8.0)	62(55.4)	39(34.8)	2(1.8)	112(54.4)
Males	17(18.1)	61(64.9)	15(16.0)	1(1.0)	94(45.6)
Nursing and obstetrics (females)	3(5.4)	31(55.4)	20(35.7)	2(3.5)	56(100.0)
Physiotherapy	10(8.0)	75(60.0)	35(28.0)	5(4.0)	125(100.0)
Females	3(3.3)	53(59.6)	28(31.5)	5(5.6)	89(71.2)
Males	7(19.45)	22(61.1)	7(19.45)	0(0.0)	36(28.8)
Pharmacy	16(21.2)	86(65.7)	27(20.6)	2(1.5)	131(100.0)
Females	10(8.9)	75(67.0)	25(22.3)	2(1.8)	112(85.5)
Males	6(31.6)	11(57.9)	2(10.5)	0(0.0)	19(14.5)
Total	55(10.6)	315(60.8)	136(26.3)	12(2.3)	518(100.0)
Females	25(6.8)	221(59.9)	112(30.3)	11(3.0)	369(71.2)
Males	30(20.1)	94(63.1)	24(16.1)	1(0.7)	149(28.8)

Comments: Numbers are given as *n*(%).

Table 4. Association between year of study and empathy class.

Class	Year of the study					Total (*n*)
	1st	2nd	3rd	4th	5th	
Class I	36(11.1)	6(10.0)	6(17.65)	7(7.5)	0(0.0)	55
Class II	190(58.8)	35(58.3)	20(58.8)	66(71.0)	4(50.0)	315
Class III	91(28.2)	18(30.0)	6(17.65)	18(19.3)	3(37.5)	136
Class IV	6(1.9)	1(1.7)	2(5.9)	2(2.2)	1(12.5)	12
Total	323(100.0)	60(100.0)	34(100.0)	93(100.0)	8(100.0)	518

In the I class, most frequent scores belonged to the students of pharmacy. Most scores within the III class were those of female students of nursing and obstetrics, while students of physiotherapy were most represented in the IV class (Table 3). In this aspect of analysis we revealed statistically significant differences. Females, more often than males, had higher average scores in classes II–IV, while males (54.6%), more often than females (45.4%) scored within the I class ($\chi^2 = 28.666$, d$f = 3, P = 0.000$).

We applied the same division of EQ scores to the number of years the participants spent in medical education. Most students, irrespective of the level of education, were represented in the II class. Due to high disparity of numbers in groups, reliable analysis of dispersion was not possible at this stage of the study (Table 4). We also found an insignificant connection between the EQ class and participants mode of study ($P = 0.817$).

5. DISCUSSION

There are many research papers which analyse the notion of empathy and adequate possibilities of measuring this attribute of personality. In our project we assumed that empathy is an ability to recognise feelings and thoughts of others and responding to these accordingly.[8,10] It appears, that among many aspects of personality which bear influence on clinical competence of physicians, empathy is of key significance.[11] It constitutes an important element of evaluation of professional competence of physicians, enables a better understanding of the patient,[12] a more accurate diagnosis and better treatment results.[2,13]

Following those experiences, some commentators postulate, that empathy testing should be employed as a criterion for assessment of medical school candidates.[7] It is worth mentioning, that such suggestions originate from the Anglo-Saxon model of education. The criteria of acceptance for a placement with a medical school include exam passes at certain grades and an entrance exam, which evaluates abstract reasoning, verbal reasoning, decision making, situational judgement and quantitative reasoning. Authors, who made a comparison between Anglo-Saxon and European models of education, point out differences between organisation of training.[14] Anglo-Saxon model is more oriented towards practical side of education, clinical experience and developing teamwork skills. On the other hand, European model gives priority to thorough theoretical preparation. Thus, recruitment of candidates to medical schools is founded on exams, which evaluate knowledge of natural sciences. In Poland, this approach is also in effect. As a result, medical school graduates from Poland are highly valued for their comprehensive knowledge. On the other hand, they have less confidence, experience[14] and ability to work in a team. In the face of lack of any systemic courses facilitating the development of empathy in students, or shaping the ability to decentration and coping with excessive stress, researchers point at an urgent need to modify the curriculum in this respect.[15]

With such perspective in mind, we believed it would be interesting to analyse the levels of empathy in medical students and compare them. As for the distribution of the empathy factor, the results revealed, that average score in females (47.14) was higher than in males (41.7). Such regularity has been pointed out by many researchers.[16–21] If we consider only those training to become doctors, then the average results for females (46.4%) and males (42.5%) were higher than those reported by Bangash AS et al. They reported EQ levels of 42 for females and 38.7 in males.[17] We also observed significant differences between the distribution of scores across the classes. Students in Pakistan more frequently scored in the I or the II class, while students in Poland were represented much more often in the III and IV class.[17] In our research, 10.6% students scored in the I class, 60.8% in the II class, 26.3% in the III class and 2.3% in the IV class. It is necessary to point out that, according to Tariq N et al., Western students usually score higher than their friends from Pakistan.[22] This state of affairs may apply to our research and also result from the fact, that the EQ test is more reliable, across various cultures, in the Western countries, while in Asian countries its reliability and sensitivity to differences between sexes is lower.[23]

Distribution of averages across different educational courses revealed, that the highest EQ scores were achieved by female nurses of nursing and obstetrics (49.3%), which was then followed by students of physiotherapy (47.1%), students training to become doctors (44.6%) and students of pharmacy (44.5%). If we were to focus on female subjects only, it is worth mentioning that the students of physiotherapy scored slightly higher average results (49.4%) than those who study nursing and obstetrics. From our perspective, the general distribution of averages is a very interesting phenomenon, which requires further investigation. Some authors suggest, that the level of empathy is connected to personality of the subjects.[16,24] Other researchers postulate, that a dependence exists between the level of empathy and a choice of a specialisation that is oriented towards working with people.[21] In this context, our further research should expand to include other educational courses, such as emergency medical services, psychology of health, dentistry, electrocardiology or medical analytics. Such project should also include students from other, non-medical fields, who would provide data for reference and comparison. Particularly remarkable aspect of this issue is scarcity of research comparing levels of empathy in regards to medical specialisations. Scientific reports tend to concentrate on analysis of empathy in doctors and nurses. At the same time, modern therapeutic reference posits creation of specialist teams, with the aim of improving process of diagnosis and therapy. Therefore, comparative studies of empathy levels in students of various medical specialisations, who will, in future, be part of specialist teams, appears particularly justified.

Many authors point out the rule of decline of empathy levels in students of medical sciences during the course of their education.[18,25] Perhaps, the cause of this should be sought for, as some have suggested, in the form of professional socialisation. Decline of empathy, in their opinion, is correlated with broadly understood clinical experience, also connected to the attitudes of clinical tutors[26] and increasing stress levels.[27] We find this very intriguing, particularly because of existing reports, which indicate a lack of regression between the level of empathy and the year of education.[22] Due to uneven distribution of the sample, we can not, at this stage, reliably relate to those reports.

While formulating results acquired during the pilot study, we observed, that an in-depth comparison of results is problematic because of lack of studies focusing on comparison of empathy levels in students of various medical specialisations. Majority of analyses available in literature refer to students of medicine and nursing. We believe that such comparison is important and may help to clarify whether choosing an occupation that revolves around contact with others correlates with previously chosen educa-

tional path and professional specialisation. Another issue of particular importance was selection of a research tool. In most cases, available analyses present results acquired through the use of Jefferson Scale of Physician Empathy (JSPE), which was built specifically to measure empathy in the context of medical education and patient care.[7] Employing a tool other than JSPE has a significant influence on the possibility of making comparisons between results of other research projects within our area of interest. After a rigorous review of literature, we concluded that available results of research projects based on JSPE mostly regard students of medicine and nursing. In our research, however, those specialities were not the only element of the project. Our task also involved acquisition of conclusions for the main research, whose scope expands to also include students of non-medical fields (faculties of pedagogy, humanities and social sciences). It is our intention to carry out a relatively objective comparison of empathy levels between students of medicine and those whose study in other fields. We concluded, that a future use of JSPE to research persons from outside of the context of medicine would not be justified due to the dedicated character of this tool. Thus, we decided to choose a more universal tool, such as EQ-40, which was built for adults of normative intelligence8 and demonstrates a high psychometric stability.[9] EQ-40 is a more universal tool which it has been used to research levels of empathy in students of medical science.[17,28–30]

6. CONCLUSIONS

On the basis of the results from this study, we can conclude that:

(1) A correlation exists between the sex of subjects and the level of empathy. Females scored higher than males more frequently.
(2) The highest average empathy levels were found in female students of nursing and obstetrics, while the lowest were found in male students of pharmacy. The highest average results among female subjects were scored by the students of physiotherapy.
(3) Majority of students (61%) demonstrated an average level of empathy (class II of EQ).
(4) We found no correlation between the year of study or the mode of study and the EQ.

Conflict of interest

The authors declare no conflict of interest.

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