



LEVELS OF EMPATHY AMONG TURKISH STUDENTS IN PHARMACY AND PHARMACY SERVICES PROGRAMS

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Abstract: To our knowledge, there is currently no research examining the levels of empathy among students enrolled in pharmacy or pharmacy services programs in Türkiye. The purpose of the present study was to address this gap in the literature by assessing the empathy levels of students enrolled in the pharmacy and pharmacy services programs at Atatürk University using the Turkish version of the Empathy Quotient (EQ-40) measurement tool. The study aims to answer two primary questions: (1) what are the empathy levels of students in the pharmacy services and the pharmacy programs? and (2) are there any differences in empathy levels based on demographic variables such as gender, academic year, and family income? A total of 306 students out of 766 pharmacy program students and 86 students out of 144 students in the pharmacy services program at Atatürk University voluntarily participated in the study. The study utilized a cross-sectional design, administering the Turkish version of the Empathy Quotient to students via a questionnaire delivered through Google Forms. The mean EQ scores for pharmacy and pharmacy services students were 45.8±11.1 and 45.9±12.9, respectively. And there was no statistically significant difference between the empathy scores of two programs. After conducting one-way analysis of variance (ANOVA) test to investigate the difference between academic year and empathy scores, a significant difference was observed in the pharmacy program, but no significant difference was observed in the pharmacy services program. Our findings showed that empathy scores for pharmacy students were slightly above average, fluctuated throughout their education, and were notably low in recent years. Additionally, empathy scores were slightly above average among students enrolled in pharmacy services program. These findings suggest that both programs should incorporate empathy education into their curricula to enhance students' empathy levels, which in turn would ensure that future professionals possess the necessary skills to communicate effectively with patients and provide optimal care.


Keywords: Pharmacists, Empathy, Pharmacy technicians

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1. Introduction

Pharmacists are highly accessible health professionals who provide a diverse range of services, hence they should be knowledgeable in counseling to best serve their patients. Given their significant role in patient care, pharmacists should possess empathy as an essential trait to provide effective and compassionate care (Lonie, 2006). Empathy is a multifaceted concept that can vary in its interpretation, but it is typically characterized as the capacity to perceive the world from others' perspectives, withholding judgment, recognizing and comprehending the emotions of others, and effectively communicating such understanding (Kaplan et al., 1989). In the healthcare setting, empathy is described as a deliberate attempt to comprehend patients' emotions and perspectives without passing judgement, thereby ensuring they receive appropriate treatment. Aspiring healthcare workers, including pharmacy students, should prioritize cultivating empathy to provide high-quality patient care and succeed in their roles as healthcare

professionals (Pratiwi et al., 2023).

Empathy is a multidimensional construct that encompasses emotional, cognitive, and behavioral components (Moudatsou et al, 2020). It has been widely acknowledged as a critical element of pharmacy professionalism in both the United States and the United Kingdom (Hammer et al., 2000; Wilson et al., 2010). In both community and hospital settings, pharmacists play a vital role in patient care by providing advice on medication side effects and interactions, sharing their expertise with other healthcare professionals, and contributing to improved prescribing practices by minimizing errors and the risk of adverse effects (Barber et al., 1994; Leape et al., 1999; Zeind and McCloskey, 2006). As such, there is growing emphasis on the importance of cultivating empathy in individuals to improve the pharmacist-patient relationship (Lonie, 2006). The significance of empathy underscores the importance for pharmacists to cultivate this skill during their training (Lonie et al., 2005).



Pharmacy technicians are widely recognized as an indispensable member of the pharmacy team, responsible for crucial tasks such as the preparation and dispensing of medications and healthcare products. Therefore, the significance of empathy in the communication between pharmacy technicians, pharmacists, and patients cannot be understated. In Türkiye, students who complete the pharmacy services program are granted the title of pharmacy technician.

To our knowledge, there is currently no research examining the levels of empathy among students enrolled in pharmacy or pharmacy services programs in Türkiye. The purpose of the present study was to address this gap in the literature by assessing the empathy levels of students enrolled in the pharmacy and pharmacy services programs at Atatürk University using the Turkish version of the Empathy Quotient (EQ-40) measurement tool. The study aims to answer two primary questions: (1) what are the empathy levels of students in pharmacy services and pharmacy programs? and (2) are there any differences in empathy levels based on demographic variables such as gender, academic year, and family income?

2. Materials and Methods

2.1. Research Design

A cross-sectional, descriptive correlational study was conducted among students enrolled in the pharmacy program and pharmacy services program at the Faculty of Pharmacy, Atatürk University.

2.2. Universe and Sample

In the autumn semester of 2021-2022, a total of 306 students out of 766 pharmacy program students and 86 students out of 144 students in the pharmacy services program at Atatürk University voluntarily participated in the study.

2.3. Data Collection Tools

sociodemographic information form used in this study consists of 5 questions, requesting information such as gender, program, academic year, and family income.

The *Empathy Quotient* utilized in this study is the developed by Baron-Cohen (Baron-Cohen and Wheelwright, 2004) and his colleagues and tested psychometrically and published in a Turkish version (Bora and Baysan, 2009). The EQ-40 is a self-report instrument consisting of 40 items designed to measure empathy (1, 4, 6, 8, 10-12, 14, 15, 18, 19, 21, 22, 25-29, 32, 34-39, 41-44, 46, 48-50, 52, 54, 55, 57-60), along with 20 distractors to prevent participants from focusing solely on the test's purpose. Respondents indicate their agreement with each question using a 4-point Likert scale, ranging from 'strongly agree' to 'strongly disagree'. Only the 40 items designed to measure empathy are included in the scoring. Responses indicating non-empathetic answer are worth 0 points, the most empathetic answer is worth 2 points, and the second most empathetic answer is worth 1 point. The total score

that can be obtained from the scale ranges from 0 to 80. In some items, an empathetic response is indicated by 'strongly agree', while in others, it is indicated by 'strongly disagree'.

2.4. Data Collection

The data collection process involved the use of Google Forms. During the fall semester of 2021-2022, a survey link was sent to students enrolled in the pharmacy and pharmacy services programs at Atatürk University. The students who completed the survey constitute the sample of the study.

2.5. Statistical Analysis

Both descriptive and inferential data analyses were conducted using SPSS® version 26 for Mac at a significance level of 0.05. Descriptive statistics such as frequency, percentage, mean, and standard deviation were used to describe the distribution of study variables. Prior to data analysis, normality tests were conducted, revealing that the data exhibited a normal distribution. The independent samples t-test was conducted to investigate the relationship between gender and program on students' empathy levels. One-way analysis of variance (ANOVA) tests were conducted to examine any differences between empathy levels and academic year, as well as family income.

3. Results

A total of 306 students from the pharmacy program and 86 students from the pharmacy services program voluntarily participated in the study. The pharmacy program has a length of study of 5 years, while the pharmacy services program has a length of study of 2 years.

In both programs, female students outnumbered male students and the majority of the students came from middle-income families. The highest number of students was in the first academic year of the pharmacy program and in the second academic year of the pharmacy services program (Table 1).

Table 2 indicates that the mean EQ scores for pharmacy and pharmacy services students were 45.8 ± 11.1 and 45.9 ± 12.9 , respectively. And there was no statistically significant difference between the empathy scores of the two programs.

Table 3 demonstrates that female students obtained higher empathy scores than male students in both programs. When the results of the independent samples t-test analysis were examined in terms of empathy scores, in the pharmacy program; the mean empathy score of women was 47.2 ± 10.9 , while the empathy score of men was 42.4 ± 10.8 ; the difference was statistically significant ($P=0.001$). In the pharmacy services program; the mean empathy score of women was 46.7 ± 12.3 ; while the empathy score of men was 44.6 ± 14.0 ; but no significant difference was observed ($P=0.480$).

In both programs, senior students had the lowest mean empathy scores. After conducting an ANOVA test to

investigate the difference between students' class level and empathy scores, a significant difference was observed in the pharmacy program, but no significant difference was observed in the pharmacy services program (P=0.005; P=0.419). The mean empathy score of students from families with a low income was the lowest in the pharmacy program (52.5 ± 12.1), whereas the

mean empathy score of students from families with a high income was the highest in the pharmacy services program (56.0±8.8). There was no significant difference in empathy scores between different class levels in the pharmacy program, while a significant difference was observed in the pharmacy services program (P=0.429; P=0.045) (Table 4).

Table 1. Characteristics of the respondents including EQ results

			N	%	\bar{X}	SD	
Gender	Pharmacy	Female	215	70.3	47.2	10.9	
		Male	91	29.7	42.4	10.8	
	Pharmacy Services	Female	55	64.0	46.7	12.3	
		Male	31	36.0	44.6	14.0	
	Academic year	Pharmacy	1	159	52.0	46.1	10.7
			2	26	8.5	51.0	8.6
3			34	11.1	47.4	8.8	
4			9	2.9	48.0	10.7	
5			78	25.5	42.3	12.6	
Pharmacy Services		Total	306	100	45.8	11.1	
		1	33	38.4	47.4	11.6	
		2	53	61.6	45.0	13.6	
		Total	86	100	45.9	12.9	
		Low	16	5.2	42.5	12.1	
Family income	Pharmacy	Below-average	32	10.5	46.8	12.2	
		Average	201	65.7	45.5	10.8	
		Above-average	48	15.7	47.8	10.8	
	Pharmacy Services	High	9	2.9	43.1	13.8	
		Low	8	9.3	56.0	8.8	
		Below-average	14	16.3	50.2	11.3	
	Pharmacy Services	Average	53	61.6	43.1	13.0	
		Above-average	9	10.5	48.1	13.8	
		High	2	2.3	41.0	8.5	

SD=standard deviation.

Table 2. Findings of independent samples t-test analysis between programs

		N	\bar{X}	SD	P
Program	Pharmacy	306	45.8	11.1	.910
	Pharmacy Services	86	45.9	12.9	

* P<0.05. SD=standard deviation.

Table 3. Findings of Independent Samples t-Test Analysis between Genders

			\bar{X}	SD	P
Gender	Pharmacy	Female	47.2	10.9	.001*
		Male	42.4	10.8	
	Pharmacy Services	Female	46.7	12.3	0.480
		Male	44.6	14.0	

* P<0.05. SD=standard deviation.

Table 4. Findings of One-Way Analysis of Variance (ANOVA) on academic year and family income

			\bar{X}	SD	P
Academic year	Pharmacy	1	46.14	10.715	.005*
		2	51.04	8.614	
		3	47.41	8.849	
		4	48.00	10.735	
		5	42.28	12.642	
Family income	Pharmacy Services	1	47.36	11.629	.419
		2	45.04	13.648	
	Pharmacy	Low	42.50	12.089	.429
		Below-average	46.75	12.176	
		Average	45.51	10.807	
		Above-average	47.79	10.804	
		High	43.11	13.824	
		Low	56.00	8.816	
		Below-average	50.21	11.329	
		Average	43.09	12.960	
Above-average	48.11	13.779			
	High	41.00	8.485		

* P<0.05. SD=standard deviation.

4. Discussion

In this study, we compared the levels of empathy between pharmacy and pharmacy services students, and investigated the potential associations between the students' empathy levels and their age, gender, class level, and family income status.

Previous studies in the literature have reported that female pharmacy students generally exhibit higher levels of empathy compared to their male counterparts (Ekong et al., 2017; Fashami et al., 2023; Fjortoft et al., 2011; Fong et al., 2021; Hall et al., 2015; Reed et al., 2021; Van Hooser et al., 2022; Wilson et al., 2010). A study conducted in the Caribbean, involving students from five distinct healthcare professions, including pharmacy, reported that female students obtained significantly higher empathy scores compared to their male counterparts (Nunes et al., 2011). Likewise, a cross-sectional survey conducted in the USA reported that female participants had significantly higher empathy scores compared to their male counterparts (Van Hooser et al., 2022). Hasan et al. conducted a questionnaire-based study in Malaysia, revealing that males had a higher mean empathy score than females (Hasan et al., 2013). However, studies from China, Korea, and the United States of America have shown no significant association between gender and empathy scores (Jeon and Cho, 2015; Li et al., 2015; Walker et al., 2022). In the present study, a significant gender difference was observed among pharmacy students, where females had higher empathy scores than males. This gender discrepancy may be attributed to women being more attuned to emotional stimuli than men (Brizendine, 2006).

A questionnaire study conducted by Van Hooser et al. (2022) did not reveal any statistically significant difference between pharmacy students' grades and their empathy scores. Likewise, a recent investigation by Fashami et al. found no significant correlation between empathy scores and academic years (Fashami et al., 2023). Similarly, a study conducted by Jeon and Cho with second and third academic year pharmacy students found no significant difference in empathy levels across the different academic years (Jeon and Cho, 2015). In previous research, mixed results have been reported regarding the relationship between empathy scores and students' class level. Nunes et al. (2011) found that first academic year students had lower empathy scores compared to second academic year students, while Li et al. (2015) found that senior students (i.e. fourth academic year students) had the highest empathy scores in a study conducted in China. Additionally, a study by Hall et al. (2015) reported that empathy scores increased with academic years, with fourth academic year students having higher empathy scores compared to first academic year students in UK. In contrast, Hasan et al. (2013) reported that fourth academic year pharmacy students had the lowest empathy scores in a study conducted in Malaysia. Consistent with these findings, our study also revealed a significant difference in empathy scores between pharmacy students of different class levels, with the lowest scores observed among final academic year students. Pharmacy students are required to complete a mini-thesis as part of their final project course, while concurrently participating their internship. It is believed that this concurrent academic and professional pressure leads to heightened stress and

anxiety levels among students, which in turn may contribute to a decline in empathy.

In our study, no significant relationship was found between family income and empathy levels of pharmacy students, and in Fashami et al. (2023)'s study, no significant relationship was found between family income and empathy levels of pharmacy students. However, a statistically significant relationship was found between empathy levels and family income in the pharmacy services program.

As pharmacists' role in direct patient care continues to expand, empathy has become an increasingly essential component of the pharmacist-patient relationship, with the potential to impact not only patient outcomes but also patient satisfaction and trust (Van Winkle et al., 2012). In our investigation, it was revealed that the empathy scores of pharmacy students are positioned at an intermediate level. Nevertheless, various studies reported that modifications in the educational system and curriculum could enhance the empathy level of pharmacy students (Fong et al., 2021; Kerr et al., 2015; Li et al., 2015; Lor et al., 2015; Reed et al., 2021; Sales et al., 2013; Simko et al., 2021).

Although no significant difference was found in the empathy levels of students in the pharmacy services program in relation to their class, a significant difference was found between family income and empathy levels. Additionally, to the best of our knowledge, this is the first study that has explored the empathy levels of students in the pharmacy service program. However, it is important to acknowledge that further research is needed to confirm our findings.

5. Conclusion

In our study, we conducted an investigation into the empathy levels of students enrolled in the pharmacy services and pharmacy programs, which have not been previously studied in the literature. Our findings showed that empathy scores for pharmacy students were slightly above average, fluctuated throughout their education, and were notably low in recent years. Additionally, empathy scores were slightly above average among students enrolled in pharmacy services programs. These findings suggest that both programs should incorporate empathy education into their curricula to enhance students' empathy levels, which in turn would ensure that future professionals possess the necessary skills to communicate effectively with patients and provide optimal care.

While this study provided significant insights into the empathy levels of students in pharmacy and pharmacy services programs, it is important to acknowledge certain limitations. The first limitation pertains to the response rate, as only 306 out of 766 students from the pharmacy program and 86 out of 144 students from the pharmacy services program responded to the questionnaire. Conducting studies with a greater number of students

enrolled in related programs would enable more robust conclusions to be drawn. The second limitation is that the study population was selected from a restricted region of Türkiye. Thus, further research conducted in more diverse regions is necessary to validate the findings of this study. The third limitation is that our study is constrained by the use of cross-sectional data, which is limited to a single point in time and thus cannot capture changes over time. Additionally, our sample was drawn exclusively from one pharmacy program and one pharmacy services program, which may restrict the generalizability of our findings. The final limitation is, our use of self-report scales as measurement instruments introduces potential sources of bias, such as social desirability and inaccurate recall, which may limit the accuracy of our results in predicting students' experiences and expectations of empathy.

Author Contributions

Percentages of the author(s) contributions is present below. All authors reviewed and approved final version of the manuscript.

%	E.U.D	T.G	R.E.
C	40	30	30
D	50	30	20
S	50	30	20
DCP	40	40	20
DAI	100		
L	20	40	40
W	70	15	15
CR	40	20	40
SR	40	30	30
PM	40	35	25

C= concept, D= design, S= supervision, DCP= data collection and/or processing, DAI= data analysis and/or interpretation, L= literature search, W= writing, CR= critical review, SR= submission and revision, PM= project management.

Conflict of Interest

The authors declared that there is no potential conflict of interest with respect to the research, authorship, and/or publication of this article.

Ethical Approval/Informed Consent

The research was granted ethical approval by the Clinical Research Ethics Committee of Atatürk University Faculty of Medicine (approval date: 04 November 2021 and protocol code: B.30.2.ATA.0.01.00/465).

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