Medical education level's relationship with attitudes toward women and LGBTIQ+ individuals

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SUMMARY

Objective: Dominant ideologies lay the groundwork for the rising prejudices against women and LGBTIQ+ individuals who may be disadvantaged in the hierarchy. These biases exist in medical doctors as well as in the community. Negative attitudes toward women and LGBTIQ+ individuals negatively affect healthcare service quality and lead to inequality and loss of rights. Hence, this study aimed to investigate the attitudes of students and resident physicians in medical school regarding sexism and discrimination based on sexual orientation.

Method: First-grade students (n=112), 6th-grade students (n=68), and resident physicians receiving postgraduate training in medicine (n=41) were included in this study. Sociodemographic data form, Ambivalent Sexism Inventory, and Multidimensional Sexual Orientation Attitude Scale were applied.

Results: Compared to groups based on education levels, scale scores on sexism and discrimination against sexual minorities did not vary between groups ($p>0.05$). The most apparent difference between women and men was the high scores of hostile sexism in male participants ($p<0.001$).

Discussion: Current medical education does not change biased attitudes of physician candidates and physicians based on gender roles and sexual orientation. For all individuals to benefit equally from the health service, it would be helpful to add gender equality and discrimination based on sexual orientation to medical education and make these classes practical if possible.

Key Words: Medical education, sexism, sexual minorities, LGBT, homophobia

INTRODUCTION

Biological sex refers to the changes between males and females; such as physiological and anatomical differences between men and women. Sex is also defined as physical attributes at birth. This biological perspective, however, is often intertwined with societal norms and cultural definitions, leading to complex interactions between "sex" and "gender." The concept of gender is used to express what is expected because society and culture define it as "female" and "male." Gender may cover roles, behaviors, and activities (1). Therefore, understanding the implications of these societal constructs is crucial for comprehending the broader discourse on gender issues.

Sexism is a type of discrimination based on gender stereotypes. It is considered chiefly negative attitudes and behaviors towards women who are disadvantaged in power relations (2). This phenomenon, deeply ingrained in many cultures, often manifests subtly, affecting various aspects of life, including healthcare. With the influence of the women's movement and feminist thought, egalitarian legal regulations, and deterrent penalties developed in some countries, direct sexist attitudes and behaviors have decreased but continue to be exhibited implicitly (1,3). Understanding that traditional attitudes towards women manifest themselves with negative attitudes and stereotypes and with positive ones is an essential indicator of how the process may work implicitly. It is within this context that

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the notion of 'Ambivalent Sexism' becomes pertinent. The theory of "Ambivalent Sexism" that conceptualizes this subject was developed by Glick and Fiske (4). The theory treats sexism as hostile and benevolent sexism in two different dimensions. Hostile sexism includes the power of men, traditional gender roles, men attributing derogatory characteristics to women and seeing them as sexual objects, and legitimizing abuse and discrimination (4). On the other hand, benevolent sexism is a more implicit legitimization of male domination, including romantic sexuality with a woman and, therefore, a man's commitment to a woman, compassion, and protectionist feelings (4).

The right to health as a fundamental right has been brought to the agenda by the World Health Organization (WHO) and defined in the International Convention on Economic, Social, and Cultural Rights (5). This right emphasizes the necessity of universal healthcare accessibility, free from gender-based discrimination. The accessibility principle of the right to health advocates non-discrimination, while the acceptability principle advocates a gender-sensitive approach (5). However, despite these principles, discrimination remains a significant barrier in healthcare, impacting marginalized groups disproportionately (6).

Many adverse effects of stigma and discrimination regarding gender and sexual identity related to mental and physical health have been revealed in the studies in the literature. This underscores the need for a healthcare system that is more inclusive and sensitive to gender and sexual diversity. Discrimination based on sex and sexual orientation and cognitive biases play a negative role in the quality of health care that women and LGBTIQ+ individuals receive adequate and appropriate health care. The evidence from various studies highlights systemic issues in healthcare that disproportionately affect women and LGBTIQ+ individuals (7,8).

The term homophobia defines hatred, fear, negative attitudes and behaviors towards homosexuals, and negative beliefs about homosexuality also include individuals who have other sexual orientations other than heterosexuality in the broad sense (9). This broad definition of homophobia reflects a range of societal attitudes and biases, underscoring the challenges faced by LGBTIQ+ individuals in various spheres of life, including healthcare. These challenges are not just societal but are also deeply embedded in medical practices and policies.

Throughout history, the society's constitution of normal and abnormal transformed. Medicine followed these constitutions by defining healthy and unhealthy in changing ways. This evolution in the medical field reflects a broader societal shift towards greater acceptance and understanding of sexual diversity. Candansayar underlined that not long ago, all trans and non-heterosexual genders were evaluated as a medical disease (10). This historical perspective highlights the drastic changes in how medical science views sexual orientation today.

Homosexuality was removed from the DSM and the International Classification of Diseases (ICD) with the decision that homosexuality is not a mental disorder in the last quartile of 20th century. This removal marked a significant milestone in the journey towards equality and acceptance. Today, WHO defines sexual health as the sexual life of a person continuing without force and with happiness and no harm, not just physically but emotionally and intellectually, as a state of health that ensures social integrity, enriches and increases personality development, communication, and sharing of love positively. Although homosexuality has been excluded from the classification of diseases for over forty years, health workers' knowledge of this issue is inadequate and incomplete (11). However, the gap between these ideal definitions and actual medical practice remains a critical issue to address.

Although homophobia is common in society, many studies have shown that homophobic attitudes and behaviors are pretty high among physicians (12, 13). This indicates a pressing need for educational reforms and awareness in the medical community. LGBTIQ+ individuals face prejudices, negative attitudes and behaviors targeting their gender; it causes chronic stress which is related to physical and mental ill health. Homophobia among healthcare workers negatively affects homosexuals, makes them helpless, and deprives them of the

right to health, which is one of the fundamental human rights (14, 15, 16). The impact of such discrimination on health underscores the importance of inclusive health care practices.

Homophobia alone has not been considered sufficient in understanding attitudes towards homosexuality. In addition to homophobia, three different terms have been proposed: homonegativity, heterosexism, and neutrality to understand discrimination, exclusion, and humiliation faced by homosexuals (17). These concepts provide a nuanced framework for understanding the multifaceted nature of discrimination against LGBTIQ+ individuals (17,18). A web-based study from Turkey demonstrated that almost a quarter of LGBT individuals reported that they were exposed to discriminative behavior in public hospitals (19). Gender bias against women negatively affect women's health and available treatments (20). Such findings reveal the prevalence of discrimination in healthcare settings, further emphasizing the need for this study.

Since discrimination based on gender and sexual orientation may affect the attitudes and behaviors of doctors towards individuals other than heterosexual men, and also the health services to be received by individuals other than heterosexual men, there arises a compelling need for in-depth research to explore these dynamics the need to conduct this research to determine the current situation has arisen. The aim of the present study is to evaluate sexism, homophobia and heterosexism levels of first-grade and sixt-grade medical students, and assistant doctors to see if medical education may give any insight about these common discriminations. This research is crucial for developing strategies to mitigate such biases and promote equality in healthcare.

METHOD

Sampling: This research was cross-sectional and was conduc-ted on first and sixth-grade students who studied medicine at Osmangazi University Faculty of Medicine and assistants who received post-graduation education in Turkiye. There were no classes on gender roles, discrimination, or gender inequality in the Osmangazi University Faculty of Medicine curriculum during data collection. The universe of this study consisted of students who continued their education in the 1st and 6th grades of Osmangazi University Faculty of Medicine in 2018-2019 and the assistants who received postgraduation training. In the aforementioned academic year, Osmangazi University Faculty of Medicine had 287 first-grade students (131 women and 156 men), 183 sixth-grade students (90 women and 93 men), and 412 postgraduate students.

The present study utilized convenience sampling method. Data collection took place in the medical faculty lessons of first grade medical students and psychiatry internship of sixth grade medical students. Assistant doctors participated in the study by snowball sampling method.

Data Collection Tools

Sociodemographic Data Form: It is a 10-question form developed by the researchers to describe the sociodemographic variables of the participants. Data, such as age, gender, marital status, place of birth, educational status of parents, and longest-lived city, were collected with this form.

The Ambivalent Sexism Inventory: The sentences in this scale were prepared by Glick and Fiske to determine the participants' attitudes toward gender roles (21). The Turkish validity and reliability study of the scale was conducted by Nuray Sakallı-Uğurlu (22). In this scale, consisting of 22 substances and a Likert type of 5 (between 1-5), two areas were evaluated: hostile and benevolent sexism. Higher scores mean higher levels of sexist attitudes. In this sample, the scale's Cronbach's Alpha value was 0.889.

Multidimensional Sexual Orientation Attitude Scale: The sentences in this scale were developed by Kaya-Yertutanol et al. to determine the participants' attitudes towards differences in sexual orientation, and a validity and reliability study was conducted (17). Especially four areas were evaluated on this scale, five Likert type (between 1-5) consisting of 43 items: heterosexism (6 items), homophobia (17 items), homonegativity (15 items), and neu-

Table 1. Sociodemographic data of the participants according to their level of medical education

		First- grade students Mean – Standard Deviation Median (Q1, Q3)	Sixth-grade students	Assistant doctors	Statistical values
Age		18.88 – 0.085	24.03 – 0.111	29.49 – 0.578	F=570.044 p<0.001*
		Number, percentage			
Gender	Women	56, 50%	38, 55.9%	22, 53.7%	x^2= 0.615
	Men	56, 50%	30, 44.1%	19, 46.3%	p=0.735**
Marital status	Married or living together	110, 98.2%	67, 98.5%	27, 65.9%	x^2= 49.619 p<0.001**
	Single	2, 1.8%	1, 1.5%	14, 34.1%	
Place of birth	Province	83, 74.1%	52, 76.5%	31, 75.6%	x^2= 0.133
	District or village	29, 25.9%	16, 23.5%	10 24.4%	p=0.936**
Mother's level of education	Secondary school graduates or less	35, 31.3%	24, 35.3%	18, 43.9%	x^2= 3.724 p=0.813**
	High School graduate	33, 29.5%	14, 20.6%	8, 19.5%	
	College graduate or above	44, 39.3%	30, 44.1%	15, 36.6%	
Father's level of education	Secondary school graduates or less	23, 20.5%	13, 19.1%	6, 14.6%	x^2= 1.577 p=0.813**
	High School graduate	23, 20.5%	18, 26.5%	11, 26.8%	
	College graduate or above	66, 58.9%	37, 54.4%	24, 58.5%	

* One-way ANOVA test ** Pearson's chi-square test

trality (5 items). Higher scores of heterosexism, homophobia, and homonegativity reveals higher levels of discriminative behavior toward LGBTQ+ individuals. On the other hand, neutrality dimension is related to being unprejudiced. Cronbach's Alpha value of the scale was 0.889 in the present study.

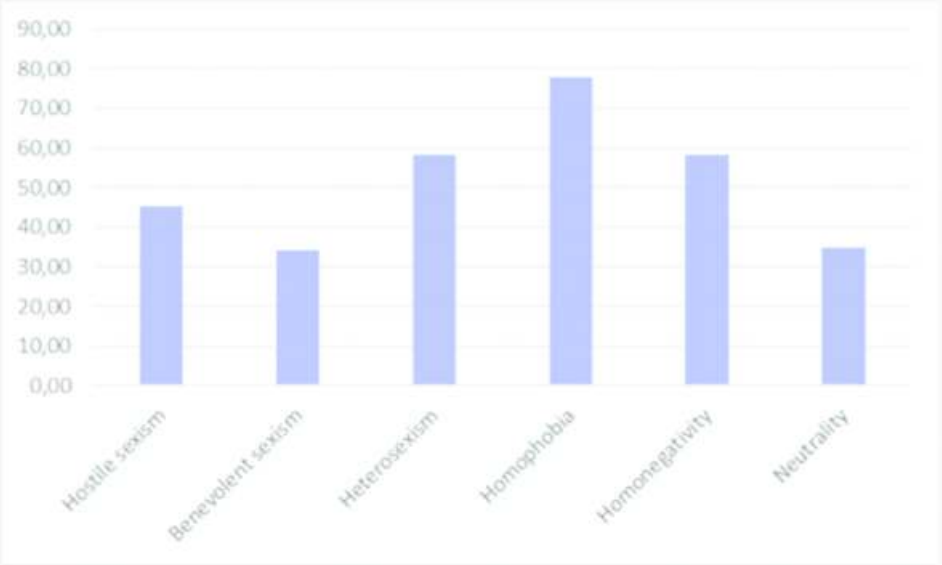
Procedure: The questionnaires were administered to 1st and 6th-grade students by first-grade students after giving prior information to the participants about this study and obtaining their consent. Researchers reached assistant doctors who received post-graduation training. The questionnaires were fully completed by the participants with informed consent. Ethics committee approval was obtained for the present study from Osmangazi University Faculty of Medicine Non-invasive Clinical Research Ethics Committee on 12.03.2019.

Statistical Analysis: In this study, data analysis was performed with the IBM SPSS 22 package program. Summary values of quantitative variables were shown as mean ± standard deviation and median (Q1-Q3), and summary values of categorical variables were shown as frequency and percentage. The Shapiro-Wilk test determined the compliance of quantitative variables to normal distribution. The comparison of two groups with normal distribution was evaluated with the independent samples t-test, and the comparison of two groups that did not comply with normal distribution was evaluated with the Mann-Whitney U test. Comparison of more than two groups that fit the normal distribution was performed by one-way analysis of variance (ANOVA), and the Kruskal-Wallis test was performed for those that did not fit. Paired comparison of the groups for significant results was performed using the Bonferroni test in one-way analysis of variance and the Dunn test for the Kruskal-Wallis test. Pearson's chi-squared analysis examined the relationship between categorical variables. The conditions obtained as $p<0.05$ as a result of the analysis were considered statistically significant.

RESULTS

This study included 221 participants: 112 from first grade, 68 from sixth grade, and 41 from assistant doctors. The sociodemographic data of participants are shown in Table 1. There was no significant dif-

Figure 1. Evaluating the percentiles of median scores



ference between the three groups concerning gender (x^2= 0.615, p=0.735), the place of birth being a province or a district/village (x^2= 0.133, p=0.936), and the education level of the mother (x^2= 3.724, p=0.813) or father (x^2= 1.577, p=0.813).

The utilized Ambivalent Sexism Inventory and Multidimensional Sexual Orientation Attitude Scale have no cut-off scores. Thus, aiming to evaluate median values easily, the median values of their subscale scores were transformed as if the subscale's minimum value was 0 and the maximum value was 100 (percentile). Figure 1 shows the evaluation of percentiles of the median values regarding the Ambivalent Sexism Inventory and Multidimensional Sexual Orientation Attitude Scale. Homophobia, homonegativity, and heterosexism were above the 50 percentile (respectively 77.94, 58.33, 58.33). Hostile sexism had the fourth highest subscore (45.45).

No significant differences in the Ambivalent Sexism Inventory and Multidimensional Sexual Orientation Attitude Scale were found in the three groups: Grade 1 students, Grade 6 students, and assistant doctors (see Table 2). The analyses were repeated while gender-stratifying. Among female students, no significant differences were observed between medical education levels regarding hostile sexism (x^2=0.456, p=0.796), benevolent sexism (x^2=0.174, p=0.917), heterosexism (x^2=1.016, p=0.602), homophobia (x^2=2.463, p=0.292), homonegativity (x^2=3.763, p=0.152), and neutrality (x^2=2.513, p=0.285). Similarly, male students

Table 2. Scale scores by medical education level

Scale- subscale		Mean – Standard Deviation Median (Q1, Q3)			Statistical evaluation
		First- grade students	Sixth-grade students	Assistant doctors	
Ambivalent Sexism Inventory	Hostile Sexism	30.91 – 10.08	30.47 – 8.87	30.20 – 7.88	F=0.104 p=0.901*
	Benevolent Sexism	25.81 – 8.65	26.96 – 7.26	25.90 – 8.09	F=0.446 p=0.641*
Multidimensional Sexual Orientation Attitude Scale	Heterosexism	20.00 (18.00, 26.00)	20.00 (18.00, 24.00)	20.00 (18.00, 23.00)	x^2=0.707 p=0.702**
	Homophobia	70.00 (57.25, 77.00)	66.50 (59.00, 76.00)	73.00 (56.50, 76.00)	x^2=895 p=0.639**
	Homonegativity	52.00 (42.00, 59.00)	47.00 (40.00, 57.75)	49.00 (40.00, 59.00)	x^2=2.381 p=0.304**
	Neutrality	12.00 (8.00, 16.00)	12.50 (9.00, 17.00)	13.00 (9.50, 17.00)	x^2=0.795 p=0.672**

* One-way ANOVA test ** Kruskal-Wallis test

Table 3. Comparison of scale scores by gender and level of medical education

	Scale	Subscale	Women	Men	Statistical value
			Mean – Standard Deviation Median (Q1, Q3)		
First-grade students	Ambivalent Sexism Inventory	Hostile Sexism	26.66 – 1.21	35.16 – 1.23	t=-4.898 p<0.001*
		Benevolent Sexism	25.27 – 1.24	26.36 – 1.07	t=-0.664 p=0.508*
	Multidimensional Sexual Orientation Attitude Scale	Heterosexism	22.00 (18.00, 27.75)	19.00 (17.00, 22.75)	U=1139.00 z=-2.504 p=0.012**
		Homophobia	74.00 (62.00, 80.00)	66.00 (53.50, 74.00)	U=1084.00 z=-2.819 p=0.005**
		Homonegativity	52.07 – 1.51	48.13 – 1.44	t=1.886 p=0.062*
		Neutrality	10.00 (6.00, 16.00)	13.00 (11.00, 16.75)	U=1154.00 z=-2.416 p=0.016**
	Number of participants, percentage		56, 50%	56, 50%	
Sixth-grade students	Ambivalent Sexism Inventory	Hostile Sexism	27.03 – 1.42	34.83 – 1.27	t=-3.982 p<0.001*
		Benevolent Sexism	25.76 – 1.17	28.47 – 1.29	t=-1.539 p=0.128*
	Multidimensional Sexual Orientation Attitude Scale	Heterosexism	21.79 – 0.69	20.53 – 0.79	t=1.195 p=0.236*
		Homophobia	69.50 (59.75, 76.00)	64.00 (57.00, 72.50)	U=478.00 z=-1.137 p=0.255**
		Homonegativity	48.39 – 1.67	46.93 – 2.03	t=0.560 p=0.578*
		Neutrality	12.58 – 0.84	14.00 – 0.93	t=-1.125 p=0.265*
	Number of participants, percentage		38, 55.9%	30, 44.1%	
Postgraduate	Ambivalent Sexism Inventory	Hostile Sexism	27.27 – 1.63	33.58 – 1.57	t=-2.755 p=0.009*
		Benevolent Sexism	24.82 – 1.62	27.16 – 1.98	t=-0.922 p=0.362*
	Multidimensional Sexual Orientation Attitude Scale	Heterosexism	20.00 (18.00, 23.50)	18.00 (16.00, 22.00)	U=151.50 z=-1.517 p=0.129**
		Homophobia	73.00 (56.75, 76.00)	73.00 (56.00, 78.00)	U=199.00 z=-0.262 p=0.794**
		Homonegativity	49.59 – 1.93	48.32 – 2.90	t=0.365 p=0.717*
		Neutrality	12.91 – 0.887	13.32 – 1.41	t=-0.250 p=0.804*
	Number of participants, percentage		22, 53.7%	19, 46.3%	

* T-test in independent samples ** Mann-Whitney U test

did not differ due to medical education levels in terms of hostile sexism (x^2=0.579, p=0.749), benevolent sexism (x^2=1.400, p=0.497), heterosexism (x^2=0.582, p=0.747), homophobia (x^2=1.521, p=0.467), homonegativity (x^2=0.270, p=0.874), and neutrality (x^2=0.255, p=0.880).

Evaluation of subscales of the Ambivalent Sexism Inventory and Multidimensional Sexual Orientation Attitude Scale by education level and gender is seen in Table 3. Female students had lower hostile sexism scores in all medical education levels (first grade: t=-4.898, p<0.001, sixth grade: t=-3.982, p<0.001, postgraduate: t=-2.755, p=0.009). First-grade female medical students also had higher heterosexism (U=1139.00, z=-2.504, p=0.012), higher homophobia (U=1084.00, z=-2.819, p=0.005), and lower neutrality scores (U=1154.00, z=-2.416, p=0.016) compared to their male counterparts.

The educational status of parents was divided into two groups: high school and above, secondary school or less, and data for women and men were analyzed separately. Lower neutrality scores were observed in women when the mother's educational status was high school and above (11.17 vs. 14.03, U=1015.5, z=-2.751, p=0.006). Males whose mothers' educational status was high school and above the high school had lower neutrality scores (12.94 vs. 14.85, t=2.016, p=0.046), higher homonegativity scores (44.46 vs 49.80, t=-2.425,

p=0.017), lower benevolent sexism scores (25.85 vs. 29.23, t=2.163, p=0.033) and higher heterosexism scores (21.00 vs. 18.69, t=-2.571, p=0.012) was found. No significant change in the subscale scores of women related to the father's education level was detected (each p>0.05). Among men, higher homonegativity (49.06 vs. 43.84, U=1275.0, z=2.070, p=0.038) and higher heterosexism (20.65 vs. 18.52, U=1324.0, z=2.447, 0.014) were found in participants whose fathers had higher education.

All participants were divided into two groups based on whether their place of birth was a province or a district/village. Significantly lower Benevolent Sexism subscale scores were found in those whose place of birth was a province (28.58 vs. 25.39, t=-2.560, p=0.011). When analyzed separately according to gender, the subscale scores of males differed in homophobia subscale scores. Males born in a province had higher homophobia scores (68.27 vs. 63.22, t=-2.326, p=0.024). Besides, there were higher benevolent sexism subscale scores in females whose birthplace was district/village (28.61 vs. 24.05, t=-2.746, p=0.007).

DISCUSSION

The present study included first-grade students, sixth-grade students, and assistant doctors at a medical school providing primary medical education and specialty training in Turkey. The attitudes of participants regarding gender and sexual orientation were examined and compared with each other. When the scale scores of the gender groups were evaluated separately according to the education level, there was no significant difference. In other words, there was no difference between the scale scores of female first-grade students, female sixth-grade students, and female assistant doctors. There is no difference between the scale scores of male first-grade students, male sixth-grade students, and male assistant physicians. Primary medical education and specialty training might be insufficient regarding gender inequality and homophobic attitudes for both men and women.

A study by Kan and colleagues in Hong Kong found that homophobia was more common in medical school students than in non-medical schools (23). The social environment of medical school students might be associated with fewer homosexual individuals (23). The negative attitudes of physician candidates and physicians based on sexual orientation will prevent the establishment of a trust-based relationship between the patient and the physician, as well as cause the patient to be unable to express his current ailments or the physician's clinical decisions to be affected by prejudice (24).

In a study conducted on private health workers in Turkey, more than half of the participants stated that they did not know an LGBTIQ+ individual and had not examined LGBTIQ+ individuals before (25). However, the vast majority would be willing to look after LGBTIQ+ individuals. In the same study, homophobia scores and discrimination scores of health workers were high, and a positive relationship between homophobia and discrimination scores was found. Considering the findings obtained in the present study, it can be concluded that medical education in Turkey does not give information about LGBTIQ+ individuals to physician candidates (25). Ertuğrul and colleagues, Akay and colleagues demonstrated similar discriminative attitudes toward LGBTQ+ individuals among medical students (26,27).

First-grade students and sixth-grade students who participated in this study did not have specific lessons on gender inequality and discrimination at the time of this study. Assistant doctors, on the other hand, have received medical education in different universities, it is unknown whether they have received special training on this subject. Limited literature in this area also reveals similar results: studies conducted in two medical schools in Turkey showed no difference between first- and sixth-grade students' attitudes to gender roles in a sample selected from a single faculty (28,29).

Our study showed that the most apparent difference between women and men was the height of hostile sexism scores in male participants. Sexist ideologies ensure the continuity of gender inequality. Hostile sexism is associated with negative behavior, especially toward women (21). In this context, one may conclude that male participants have internalized their advantageous positions in

gender inequality. With age, hostile and benevolent sexism decreases in women, and hostile sexism decreases in men (30). Additionally, levels of benevolent sexism in men remain constant over time (30). Hostile sexism is one of the variables shown to predict transphobic attitudes, intergroup contact, and homophobia in a study of young people aged 18 to 25 who speak Turkish (31). In this context, planning interventions related to hostile sexism can be beneficial not only regarding gender inequality but also in preventing transphobia. Considering violence against women and gender-based discrimination and their health outcomes, it is essential to make interventions, especially targeting young men, regarding hostile and benevolent sexism should be aimed in the second place.

In the gender comparison of first-grade students, more negative attitudes about sexual orientation were found in women. A study by Nieto-Gutierrez and colleagues focused on medical students: homophobia levels were lower in women and big-city education areas and in those who knew or treated a homosexual person (32). In contrast, homophobia was more common in men with traditional gender stereotypes (32). Matharu and colleagues investigated attitudes toward homosexual men among medical students (24). The findings showed that sexual biases were more common in young men, and negative attitudes were associated with heterosexism and adherence to male gender roles (24). In our study, there may have been a discrepancy with the literature because only first-grade medical students were in this comparison, and participants were taken from a single center.

The present study showed that the parents' education level may be associated with medical students' attitudes toward women and LGBTQ+ individuals. Male medical students had less benevolent sexism if their mothers had higher education. That might be because, as the mother reaches higher education, she will hold power positions related to her career or be more autonomous in her relationships. Having an independent female model in their life may change male medical students' attitudes toward women, such as women should be protected. Such relation did not appear in female medical students. The results also demonstrated that male and female participants with mothers with higher education had lower neutrality subscale scores. Additionally, male medical students had higher homonegativity and higher heterosexism when their mothers or their fathers had higher education levels. That is interesting because as the parent's education level increases, discriminative behavior increases, too. On the other hand, few educational facilities have curricula with anti-discrimination content and are frequently where discrimination occurs (33).

The present study found differences in attitudes toward women and LGBTQ+ individuals related to participants' birthplace. In rural areas, males had higher homophobia, and females had higher benevolent sexism. Rural areas are known to be associated with higher homophobia (34). Our sample showed gender differences regarding homophobia in rural areas. Accordingly, Banwari and colleagues found that female medical students had more positive attitudes toward homosexual individuals (35). Masculine culture in rural areas may affect males differently regarding internalizing discriminative attitudes.

Recommendations for Current Applications

The history of medicine is written by heterosexual cis-gender men, and medical education is again predominantly given by them. Medicine gendered in this way with the view of men brings some information to the forefront while covering some of them (36). Thus, some issues related to women and sexual minorities are less researched and less effectively treated compared to their importance regarding health and the strength of the opportunities at hand. A compilation of gender differences in medical students' specialty preferences focused on the possibility of the impact of traditional gender roles when determining students' futures. Thus, managers should take responsibility for education content regarding gender equality and gender roles until societal change exists (37). A qualitative study examining medical students' thoughts on gender roles in Sweden stated that educators need more gender knowledge to prevent strengthening stereotypical ideas about gender (38). Gender problems caused by the patriarchate in medical education and practice can be summarized as sexual harass-

ment, women's lower wages for equal work, gender clustering in specific medical areas, and leadership positions often belonging to men. According to Sharma, feminist theories would significantly contribute to medical education (36). It can help to restructure the medical education curriculum content critically, teach medicine to develop empathy, and frame research questions sensitive to gender and sexual orientation.

LGBTIQ+ individuals have worse physical and mental health than heterosexual cis-gender peers, which is explained by the minority stress they experience (39). Didactic classes and practical classes aimed at skill development are used to integrate LGBTIQ+ sensitive anti-discrimination approaches into medical education. Streed and Davis stated that target-specific classes with small groups, including theoretical knowledge and role-play exercises for skill development, enabled medical students to take anamnesis about sexuality and sexual minorities more comfortably (39).

Limitations

Our work has many limitations. First, the evaluations were conducted with tests completed by participants, and no further evaluation was conducted. In addition, participation rates in this study are close to half is also a disadvantage regarding the representation power of this sample. One of the limitations of our study is that the method used to evaluate the effects of medical education on attitude change regarding gender roles has more than one confounding variable. We did not follow up the participants, instead, we compared tho different groups. Besides, about assistant doctors, we did not include the speciality area of them, which may affect their attitudes on sex and gender.

As stated before, first-grade and sixth-grade medical students were provided with the same curriculum. That curriculum did not contain issues related to gender inequality, gender-based discrimination, or discrimination related to sexual orientation or gender identity. Our results might be related to the deficiency in the mentioned curriculum in the medical faculty. Besides, postgraduate medical students, also known as residents, may have graduated from other medical faculties with the same or different curriculums. Thus having residents in analyses may be confounding.

To our knowledge, this study is the first to show the attitudes of medical school students toward LGBTIQ+ individuals in the literature. In addition to a few studies that have previously shown that medical education does not change attitudes about gender roles, it is the only study that has shown medical education has an insufficient effect on homophobia transphobia attitudes. It is understood that medical education does not transform students' attitudes toward gender roles and LGBTIQ+ individuals. Medical education should include applied classes to increase awareness of gender equality, homophobia, and transphobia.

Current medical education does not change biased attitudes of physician candidates and physicians based on sexism and sexual orientation. Males may be more vulnerable regarding endorsing culturally discriminative attitudes. For all individuals to benefit equally from the health service, it would be helpful to add gender equality and discrimination based on sexual orientation to medical education and make these classes practical if possible.

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