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Knowledge, Attitudes, and Practices of Healthcare Providers in Addressing the Care Needs of Individuals who identify as LGBTQIA+ in Türkiye : Evidence from Implicit and Explicit Measures

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Abstract

Background

Providing equitable care is essential, as lesbian, gay, bisexual, transgender, queer, intersex, asexual, and other sexual and gender minority (LGBTQIA+) individuals experience substantial health disparities. Healthcare providers' knowledge, attitudes, and clinical practices play a critical role in reducing these inequities. This study aimed to examine healthcare providers' knowledge, implicit attitudes, and practices regarding the care needs of LGBTQIA+ individuals in Türkiye.

Methods

This descriptive cross-sectional quantitative study was conducted as part of a larger research project. Data were collected from 278 nurses and physicians working in diverse healthcare settings in Türkiye. Participants completed a sociodemographic questionnaire, the Knowledge and Practices to Address Care Needs of LGBTQIA+ Individuals Questionnaire based on the Health Equity Framework, and two web-based Implicit Association Tests (IATs), namely the Sexuality IAT and the Transpictures IAT. Descriptive statistics, group comparisons, and correlation analyses were performed.

Results

Participants demonstrated slight implicit attitudes favoring heterosexual and cisgender individuals. Higher educational attainment, fewer years of professional experience, and personal contact with LGBTQIA+ individuals were associated with greater knowledge and more inclusive practices. No significant association was found between implicit attitudes and self-reported knowledge and practices. This dissociation suggests that favorable self-reported responses may reflect social desirability rather than the absence of underlying implicit bias.

Conclusions

The findings indicate that healthcare providers may report inclusive practices despite maintaining subtle implicit biases toward LGBTQIA+ individuals. Educational interventions, opportunities for meaningful intergroup contact, and institutional policies addressing both explicit and implicit dimensions of bias are needed to promote equitable LGBTQIA+ healthcare in Türkiye.

1. Background

People of diverse sexual orientations, gender identities, and expressions—including those who idenitify as LGBTQIA+ (Lesbian, Gay, Bisexual, Transgender, Queer, Intersex,Asexual) and Plus individuals—face significant disparities in physical and mental health outcomes (1). Compared to their heterosexual and cisgender counterparts, LGBTQIA+ individuals have higher rates of chronic health problems such as cancer, asthma, cardiovascular disease, obesity, substance misuse, cigarette smoking, and suicide (2, 3) and may be at increased risk of experiencing psychosocial stressors based on gender identity and sexual orientation (4–6). Sufficient data exists to conclude that perceived/experienced explicit and subtle forms of hostility and bias among health care providers are a significant contributor to health care disparities and the underutilization of health care services among minorities (7). Therefore, discrimination and stereotypical attitudes among health providers toward LGBTQIA+ individuals can act as a barrier and may have a detrimental effect, preventing LGBTQIA+ individuals from using health services thus contributing factors to health disparities (2, 3). LGBTQIA+ individuals are more likely to delay or avoid necessary medical care than heterosexual and cisgender individuals. These disparities are due, in part, to lower healthcare utilization by LGBTQIA+ individuals (2, 3).

The existing health disparities may be driven by fear of discrimination, negative attitudes toward HCPs, lack of health insurance, in conjunction with a lack of knowledge and biases regarding LGBTQIA+ lived realities and health needs on the part of healthcare providers, which translate into healthcare access patterns and service provision practices and encounter within our healthcare settings (8). The Minority Stress Model provides an important framework for understanding these disparities. According to this model, chronic exposure to stigma, discrimination, expectations of rejection, concealment of identity, and internalized stigma

creates cumulative psychosocial stress among sexual and gender minorities, contributing to adverse mental and physical health outcomes (9). HCPs play an essential part in providing equitable care for LGBTQIA+ individuals. However, the views and biases of HCPs toward LGBTQIA+ individuals may negatively impact care, resulting in less time spent with them and an ineffective assessment, treatment, and follow-up (10).

There is some ambiguity in defining health disparity and health equity. Thus, it is important to define these terms explicitly. While health disparity refers to unfair and avoidable differences in health outcomes among socially disadvantaged groups, health equity is the goal of eliminating those disparities by ensuring everyone has a fair and just opportunity to be as healthy as possible (11). Equity care refers to the fair and responsive delivery of healthcare that actively accounts for the unique needs, contexts, and challenges of marginalized populations. Equity acknowledges existing health disparities—such as those faced by LGBTQIA+ individuals in access, quality, and outcomes—and seeks to address them through inclusive, culturally competent, and individualized care (12).

HCPs' knowledge of LGBTQIA+ communities is a critical determinant of health outcomes, with numerous studies emphasizing the need for comprehensive cultural competence and awareness concerning LGBTQIA+ identities and related health disparities (13–15) refer to dispositions to respond favorably or unfavorably to an object, person, institution, or event (16). Explicit attitudes are consciously controlled and typically measured through self-reports. In contrast, implicit attitudes are automatically triggered and often operate outside conscious awareness (17). These unconscious evaluations frequently reflect underlying assumptions—ideas accepted as true without deliberate reflection—and shape biases that predispose individuals for or against certain groups in ways that lack objectivity (18). In the context of LGBTQIA+ health care, implicit attitudes can function as preconceived ideas about this population, rooted in socially learned stereotypes that may not align with providers' consciously endorsed values. Related concepts such as homophobia, homonegativity, heteronormativity, and cisnormativity are also key in understanding healthcare service provision toward LGBTQIA+ individuals. Homophobia and homonegativity refer to negative attitudes, prejudice, or discomfort toward individuals with diverse sexual orientations, whereas heteronormativity reflects the assumption that heterosexuality is the assumed or socially preferred norm (19). Similarly, cisnormativity refers to the assumption that all individuals identify with the sex assigned to them at birth (20). These attitudes and normative assumptions may shape the patient-provider relationship in subtle yet harmful ways. Previous studies on HCP attitudes toward LGBTQIA+ individuals have predominantly focused on explicit attitudes rather than implicit ones (21–23). Yet implicit attitudes shape assumptions about patient adherence, hinder communication, and contribute to microaggressions—subtle yet harmful behaviors that compromise care quality—particularly under time pressure, when providers are more likely to rely on automatic stereotypes (3).

The implementation of inclusive practices in healthcare for LGBTQIA+ individuals is crucial to addressing the health inequalities faced by this diverse population. Such practices improve patient experiences and outcomes and foster a culture of inclusion and dignity in healthcare settings (24, 25). Inclusive practices encourage trust and open communication between patients and HCPs, which is pivotal for effective healthcare delivery (26).

In terms of practices, the implementation of inclusive strategies is crucial for fostering an affirming healthcare environment. Best practices recommended by the American Medical Association include adopting visible displays of sexual and gender diversity and ensuring the collection of inclusive sexual orientation and gender identity data during patient intake (27, 28). However, the initiation and long-term sustainability of such practices encounter significant challenges in sociocultural contexts where traditional norms and values remain predominant (29).

However, the implicit attitudes of HCPs toward LGBTQIA+ individuals are yet to be investigated in Türkiye, which has a diverse population in terms of nationality and a blended culture between Europe and Asia. Additionaly, increasing anti-LGBTQIA+ rhetoric and the limited visibility of gender-affirming healthcare initiatives in recent years, have contributed to ongoing barriers in access to inclusive healthcare services in Türkiye (30). As the number of individuals in Türkiye who self-identify as LGBTQIA+ increases, it is critical to gain a more comprehensive understanding of HCPs' knowledge, implicit attitudes, and practices toward the LGBTQIA+ population to improve their health and use of healthcare services.

This study examined HCPs' knowledge, attitudes, and practices in addressing the care needs of individuals who self-identify as LGBTQIA+, addressing the gap in Türkiye. The present manuscript reports the quantitative findings of a broader research project.

Its goal is to help inform future interventions to address attitudes, increase knowledge, and implement needed practices aimed at improving health equity for LGBTQIA+ individuals.

2. Method

2.1. Design

This manuscript presents the quantitative component of a larger project. A descriptive cross-sectional quantitative design was used for the present study. The research utilized a quantitative approach aligned with the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) guidelines. (STROBE checklist provided as a related file).

2.2. Participants

The study sample consisted of nurses and physicians who work in Türkiye. Nurses with all levels of education (i.e., high school, associate, bachelor's, master's, and doctoral degrees) were included in the study.

Inclusion Criteria

Inclusion criteria included (1) Nurses and physicians employed in research and training hospitals, public hospitals, primary healthcare services, and private hospitals in Türkiye, (2) Ability to speak Turkish, (3) 18 years of age or older, (4) at least one year of working experience as a healthcare provider.

2.3. Theoretical/Conceptual Framework

The Education Training and Research (ETR)'s health equity framework is a science- and justice-based model developed for public health researchers and practitioners to address health inequities (31). It emphasizes equity as central to health outcomes and considers how individual, relational, structural, and biological factors interact to shape well-being. The framework identifies four key spheres of influence—"Systems of power", "Relationships and Networks", "Individual factors", and "Physiological Pathways"—and adopts a life-course perspective to highlight how cumulative experiences across the lifespan and generations impact health. The Health Equity Framework aims to move beyond individual-level interventions by guiding multi-level, equity-focused strategies (31). In this research, ETR's Health Equity Framework was used to inform and operationalize the variables of interest in this study. The variables can be seen linked with four key spheres (Supplementary file 1). A Knowledge and Practices to Address Care Needs of LGBTQIA+ Individual Questionnaire was created using this framework to measure knowledge and practices of HCPs.

2.4. Instruments

The data of this study were obtained via *Sociodemographic Form*, *Knowledge and Practices to Address Care Needs of LGBTQIA+ Individual-Questionnaire* and *Implicit Association Tests (Sexuality IAT and Transpictures IAT)*.

2.4.1. Sociodemographic Form

This form is a questionnaire comprising questions on the participants' characteristics, including age, sex assigned at birth, gender identity, sexual orientation, marital status, profession, level of education, workplace setting, working experience (in years), and whether they have an LGBTQIA+ friend or family member. A total of 11 questions are included in this form (Supplementary file 2). Previous professional experience in providing care to LGBTQIA+ individuals was not directly assessed, as sexual orientation or gender identity may not always be openly disclosed within healthcare settings in Türkiye.

2.4.2. Knowledge and Practices to Address Care Needs of LGBTQIA+ Individual

For measuring knowledge and practices to adress care needs og LGBTQIA+ individuals, a 43-item questionnaire was developed by the authors based on the ETR's Health Equity Framework. The items were designed to reflect key domains such as Physiological Pathways" -Knowledge", "Relationship and Network" - Practice, "Systems of Power" - Practice, and "Individual Factors" -Practice. Content validity was ensured through expert review by three professionals in the fields of psychiatric nursing and LGBTQIA+ health

in terms of clarity, relevance, and comprehensiveness, and minor revisions were made accordingly. Based on their feedback, minor adjustments were made to enhance clarity and cultural appropriateness.

The questionnaire consists of four subscales: 'Physiological Pathways"-Knowledge (14 items), "Relationship and Network"-Practice (9 items), "Systems of Power"- Practice (11 items), and "Individual Factors"-Practice (9 items) (Supplementary file 3).

"Physiological Pathways" was used to measure the knowledge level of HCPs.

"Physiological Pathways"- Knowledge (14 items, min = 14-max = 70) has statements measuring the knowledge of physiological pathways in addressing the care needs of LGBTQIA+ individuals. Questions were asked about how HCPs see their skills and knowledge to address the unique health needs of LGBTQIA+ individuals and how HCPs address the environment and personal experiences affecting LGBTQIA+ individuals' health to provide tailored care (Example item: I have knowledge about trans specific healthcare problems and services).

"Relationship and Network", "Systems of Power" and "Individual Factors" were used to measure practices of HCPs.

"Relationship and Network"- Practice (9 items, min = 9-max = 45) has statements measuring the practices regarding relationships and networks in addressing the care needs of LGBTQIA+ individuals. Questions were asked about how healthcare providers (HCPs) promote support systems (such as their familial relationships, finding community and developing relationships, and their work and school life) to encourage health-promoting choices and prevent health-harming behaviors among LGBTQIA+ individuals (Example item: I ask LGBTQIA+ individuals if they have a partner).

"Systems of Power"- Practice (11 items, min = 11-max = 55) has statements measuring the view of the work environment practices regarding Systems of Power. Questions were asked about how much HCPs are familiar with and use the sources and opportunities available in the community for LGBTQIA+ individuals, how HCPs ensure the care environment is welcoming and safe for LGBTQIA+ individuals, which policies and regulations are in place or what they to advocate for system change to ensure LGBTQIA+ individuals health in healthcare settings (Example item: Specific needs of LGBTQIA + are acknowledged into medical forms).

"Individual Factors"-Practice (11 items, min = 11-max = 55) has statements measuring practices regarding individual factors in addressing the care needs of LGBTQIA+ individuals. Questions were asked about how HCPs address and promote LGBTQIA+ individuals' coping, self-control, self-efficacy, and relationship skills that provide better mental and physical health. This part will focus on HCPs considering unique factors that LGBTQIA+ individuals may struggle to have better health. (Example item: I ask LGBTQIA+ individuals how they would like to be addressed).

Responses to all items in the questionnaire are on a five-point Likert scale from 1 (disagree strongly) to 5 (agree strongly) or 1 (never) to 5 (always). The higher scores indicate higher positive practices and a higher knowledge level in addressing the care needs of LGBTQIA+ individuals with no reverse items.

Internal consistency analyses demonstrated good to excellent reliability across the questionnaire domains. Cronbach’s alpha coefficients were .903 for Physiological Pathways, .867 for Relationship and Network, .862 for Systems of Power, and .909 for Individual Factors. The overall internal consistency of the questionnaire was excellent (α = .932). While full psychometric validation (e.g., factor analysis) was not performed, this questionnaire aimed to assess factual knowledge and practices rather than latent psychological constructs. Therefore, the combination of content validation and reliability analysis was considered sufficient for the purposes of this study.

Formal exploratory or confirmatory factor analysis was not conducted, as the questionnaire was designed as a theory-informed questionnaire instrument rather than a fully validated psychometric scale. Therefore, the psychometric properties of the questionnaire should be interpreted with caution.

2.4.3. Implicit Association Test (IAT)- Attitudes

Implicit attitudes are often measured using implicit association tests (IAT), computer-administered reaction time tests that record differences in participant response patterns and reaction times related to paired associations (32, 33). Participants sort stimuli

(i.e., gay and lesbian-associated words or images) and affective nouns and adjectives (Example: "agony" and "wonderful") into categories ("good" or "bad") using computer keys (33).

The implicit attitudes of HCPs were assessed by the Implicit Association Test - A total of two IAT tests, as “Sexuality IAT” and “Transgender IAT with pictures” were used in this study to assess implicit attitudes (32).

Sexuality IAT was used to assess implicit attitudes toward gay men and lesbians. The Sexuality IAT assesses associations between two concepts (i.e., gay individuals and heterosexual individuals) and two attributes (good and bad). Words or images representing each of the categories appear once at a time in the middle of the computer screen, and participants sort them into 1 of the 4 categories as quickly as possible, using two computer keys ("e" and "i") (34).

Transgender IAT with pictures was used to assess implicit attitudes toward transgender people. The transgender IAT with pictures assesses associations between the target categories (Cisgender People vs. Transgender People) and attribute categories (Good/Bad). In the Turkish adaptation study, the reliability values of the IAT were calculated, and scores were between .70 and .83. The results of external validity are consistent with the international literature (35). Interpretation of D-scores: $D \leq -0.65$: strong preference for non-conforming pairings / $-0.65 < D \leq -0.35$: moderate preference/ $-0.35 < D \leq -0.15$: slight preference /$-0.15 \leq D \leq 0.15$: no preference / $0.15 < D \leq 0.35$: slight preference for conforming pairings/ $0.35 < D \leq 0.65$: moderate preference/ $D \geq 0.65$: strong preference. Congruent and incongruent trial screens from the Sexuality IAT and Transpictures IAT illustrating how participants categorized stimuli using the response keys during the assessment process are presented in Fig. 1.

IAT D-scores and response accuracy percentages were automatically calculated using the embedded standard scoring procedures of the IAT platform. The mean response accuracy rate was 92.12% (SD = 10.46) for the Sexuality IAT and 83.41% (SD = 13.74) for the Transpictures IAT, indicating acceptable task performance and response quality across both measures.

Internal consistency estimates for both IAT measures were above .65. Although Cronbach’s alpha is not conventionally emphasized for reaction-time-based implicit measures due to their response latency structure, these coefficients may provide a preliminary indication of score consistency and should therefore be interpreted cautiously (36).

2.5. Data Collection Procedure

The data were collected using a convenience sampling method, which involves selecting participants who are readily available and willing to take part. Given the wide geographical distribution of healthcare professionals across Türkiye, the sampling strategy was designed to maximize accessibility and participation. Physicians and nurses working in various healthcare settings—including public hospitals, university hospitals, and primary care centers—were invited to participate voluntarily. An online platform was utilized to disseminate the questionnaire, allowing for broader reach and facilitating data collection from diverse regions. A study link was created, and after obtaining consent, the participants were directed to the Sociodemographic Form and Knowledge and Practices to Address Care Needs of LGBTQIA+ Individuals-Questionnaire. After completing this section, the page directed participants to upload an application to take the Implicit Association Tests. Implicit Association Tests were accessible via computer or mobile phone. To encourage participation and completion of the study procedures, participants who completed the tests were provided with a 5 USD supermarket discount coupon. An a priori power analysis using G*Power 3.1 (test family: F tests; statistical test: ANOVA: fixed effects, omnibus, one-way) with a medium effect size ($f = 0.25$), $\alpha = .05$, power = .80, and four groups indicated a minimum sample size of approximately 180 participants. In total, 278 HCPs were recruited, exceeding the required sample size, and ensuring adequate statistical power for group comparisons and subgroup analyses.

2.6. Ethical Consideration

Ethical approval for this study was obtained from the X University Committee on Human Research (IRB Approval No: [2023.033.IRB3.017]. The informed consent form was embedded in the online link, and the participants who confirmed the informed consent form could access and complete the questionnaire. All procedures were conducted according to the ethical principles outlined in the Declaration of Helsinki.

2.7. Data Analysis

The SPSS 25.0 program was used to analyze the data. Descriptive statistics were used to summarize participants' characteristics, including means, median, and standard deviations (SD). Independent Samples T-test and One Way ANOVA analyses were used for the comparison of variables. Pearson Correlation analysis was performed for the variables of interest to determine whether any relationship existed between them. The confidence interval was set at 95%.

3. Results

A total of 278 HCPs were included in this study; of those, 84 participants could not complete the IATs due to access problems or because they discontinued them due to difficulties with the application. Therefore, the IAT analyses were conducted with data from 194 of the 278 participants. Additional analyses comparing participants who completed the IATs and those who did not revealed that participants who completed both the Sexuality IAT and the Transpictures IAT procedures were significantly younger than non-completers ($p = .004$ and $p < .001$, respectively). No significant differences were observed regarding other sociodemographic characteristics or questionnaire domain scores, including Physiological Pathways, Relationship and Network, Systems of Power, and Individual Factors (all $p > .05$). The majority of participants were aged 20-29 (52.9%), and the predominant sex assigned at birth was female (78.4%), with most identifying their gender as women (76.3%). The vast majority (85.3%) identified their sexual orientation as heterosexual, and most participants were single (60.1%). The overwhelming majority were nurses (89.2%), and more than half held a bachelor's degree (51.8%). The most common workplace was a state research and training hospital (45.7%), and nearly half of the participants (48.2%) had less than five years of work experience. Additionally, 93.5% reported not having an LGBTQIA+ family member, and 53.6% stated that they do not have an LGBTQIA+ friend (Table 1).

Table 1. Demographic Frequency and Percentage Distributions of Study Participants (n=278)

Variables	Category	f	%
Age	20-29	147	52.9
	30-39	97	34.9
	39+	34	12.2
Sex Assigned at birth	Female	218	78.4
	Male	59	21.2
	Intersex	1	.4
Gender identity	Woman	212	76.3
	Man	60	21.6
	Gender non-conforming	6	2.2
Sexual Orientation	Heterosexual	237	85.3
	Gay	7	2.5
	Bisexual	12	4.3
	Asexual	3	1.1
	Queer	2	.7
	I do not want to specify	16	5.8
	I want to specify	1	.4
Marital status	Single	167	60.1
	Married	90	32.4
	Divorced	12	4.3
	Living with partner	9	3.2
Profession	Nurse	248	89.2
	Physician	30	10.8
Level of education	High School	15	5.4
	Bachelor	144	51.8
	Master	84	30.2
	Specialty in medicine / PhD	35	12.6
Workplace Setting	Research and Training Hospital/ State	127	45.7
	Research and Training Hospital/ Private	10	3.6
	State Hospital	58	20.9
	Primary Healthcare Services	16	5.8
	Private Hospital	43	15.5
	I do not want to specify	24	8.6
Working experience (in years)	Less than 5 years	134	48.2
	5-10 years	77	27.7
	Over 10 years	67	24.1

Whether they have an LGBTQIA+ family member	Yes	18	6.5
	No	260	93.5
Whether they have an LGBTQIA+ friend	Yes	129	46.4
	No	149	53.6

The mean score for Physiological Pathways was 51.61±8.82, for Relationships and Networks was 26.48±7.13, for Systems of Power was 25.67±7.15, and for Individual Factors was 26.58±8.20. Regarding Implicit Association Test (IAT) scores, the mean score for the Sexuality IAT was 0.26±0.40, while the mean score for the Transpictures IAT was 0.17±0.37, as shown in Table 2.

Table 2. Descriptive Statistics Based on Survey and IAT Tests

Knowledge and Practices to Address Care Needs of LGBTQIA+ Individual-Questionnaire	**N**	**Min**	**Max**	Mean±SD
Physiological Pathways	278	14	70	51.61±8.82
Relationship and Networks	278	9	42	26.48±7.13
Systems of Power	278	11	50	25.67±7.15
Individual Factors	278	9	45	26.58±8.20
Implicit Association Test (IAT)				
Sexuality	194	-2	2	0.26±0.40
Transpictures	194	-2	2	0.17±0.37

Descriptive statistics and group comparisons were conducted to examine the influence of sociodemographic and professional characteristics on the four dimensions of the scale: Physiological Pathways, Relationships and Networks, Systems of Power and Individual Factors (Table 3).

	Physiological Pathways (Knowledge)		Relationship and Networks (Practice)		Systems of power (Practices)		Individual factors (Practice)	
Age								
20-29	52.48±7.89		26.71±6.89		27.32±7.09		26.37±8.01	
30-39	50.94±10.45	F=1.744	26.63±7.64	F=0.769	22.78±6.47	F=13.349	26.78±8.13	F=0.094
39+	49.76±7.17	p=.177	25.06±6.69	p=.464	26.79±6.83	p<.001**	26.85±9.36	p=.910
Level of education								
High School	39.53±15.52		20.87±8.52		25.27±11.09		20.67±7.72	F=3.616
Bachelor	51.88±7.75	F=11.599	26.38±6.65	F=3.741	26.40±7.19	F=1.359	26.26±7.72	p=.014*
Master	52.33±7.84	p<.001**	27.31±6.97	p=.012*	25.26±6.27	p=.256	27.45±8.72	
Speciality in medicine / PhD	53.91±7.76		27.29±7.96		23.86±6.77		28.31±8.09	
Workplace setting								
Research and Training Hospital/ State	51.94±8.96		26.96±7.36		24.89±6.36		27.42±8.56	F=1.356
		F=0.842		F=1.934		F=1.386		p=.241
Research and Training Hospital/ Private	52.70±5.72	p=.521	28.20±6.36	p=.089	26.00±5.31	p=.230	28.00±6.58	
State Hospital	49.60±9.80		24.00±6.57		24.97±7.52		24.21±8.02	
Primary Healthcare Services	51.94±8.78		26.69±5.08		26.69±6.32		25.94±6.97	
Private Hospital	52.07±7.94		27.70±7.57		27.74±8.41		27.00±7.79	
I do not want to specify	53.17±8.18		26.88±7.09		27.00±8.44		26.92±8.29	
Profession								
Nursing	51.73±8.85	t=0.640	26.67±7.03	t=1.257	25.70±7.33	t=0.167	26.79±8.12	t=1.281
Physican	50.63±8.64	p=.523	24.93±7.88	p=.210	25.47±5.42	p=.868	24.77±8.75	p=.201
Professional experience (in years)								
Less than 5 years	52.83±7.80	F=5.106	26.75±6.82	F=5.779	27.34±7.04	F=8.071	26.76±7.98	F=1.468
		p=.007**		p=.003**		p<.001**		p=.232
5-10 years	52.00±7.98		28.05±6.62		23.51±6.60		27.47±7.26	
Over 10 years	48.72±10.91		24.13±7.81		24.82±7.23		25.18±9.48	
Whether they have an								

LGBTQIA+ family member								
Yes	53.11±16.81	t=0.747	29.00±9.79	t=1.555	21.67±6.26	t=-2.483	29.33±9.18	t=1.479
No	51.50±8.03	p=.456	26.30±6.90	p=.121	25.95±7.13	p=.014*	26.38±8.11	p=.140
Whether they have an LGBTQIA+ friend								
Yes	54.49±8.71	t=5.309	28.63±7.00	t=4.862	24.73±7.26	t=-2.062	28.39±7.28	t=3.499
No	49.11±8.15	p<.001**	24.62±6.73	p<.001**	26.49±6.96	p=.040*	25.01±8.64	p<.001**

Table 3. Comparison of Knowledge and Practices to Address Care Needs of LGBTQIA+ Individual-Survey with the Demographic Variables (n=278)

Statistics: t: Independent Samples T-test; F: One Way ANOVA; **p<0.01; *p<0.05

Age. One-way ANOVA revealed no significant differences among age groups for Physiological Pathways, Relationships and Networks, or Individual Factors (all p > .05). In contrast, a significant difference emerged for Systems of Power F (2. N) = 13.35. p <.001. Post hoc Tukey tests indicated that participants aged 20–29 and 39+ scored significantly higher on Systems of Power compared to those aged 30–39 (p < .05).

Education level. Education level significantly influenced three dimensions: Physiological Pathways, F(3. N) = 11.60, p < .001; Relationship and Networks, F(3. N) = 3.74, p = .012; and Individual Factors F(3. N) = 3.62, p = .014. No significant difference was observed for Systems of Power. F(3. N) = 1.36, p = .256. Post hoc analysis showed that participants with a bachelor's, medical specialization, or PhD scored significantly higher than those with only a high school degree in Physiological Pathways and Relationship and Networks. Similarly, participants with a master's degree, medical specialization or PhD scored higher than high school graduates in Individual Factors (all p < .05).

Workplace setting. No significant associations were found between workplace setting and health care providers' knowledge, implicit attitudes and practices toward LGBTQIA+ individuals (all p > .05), .

Profession. Independent-samples t-tests showed no significant differences between nurses and physicians in any dimension: Physiological Pathways (t(N) = 0.64. p = .523); Relationship and Networks (t(N) = 1.26. p = .210); Systems of Power (t(N) = 0.17. p = .868); Individual Factors. t(N) = 1.28. p = .201.

Years of working experience. Significant differences were found for Physiological Pathways F(2. N) = 5.11. p = .007; Relationship and Networks F(2. N) = 5.78. p = .003; and Systems of Power F(2. N) = 8.07. p < .001, but not for Individual Factors (p > .05). Post hoc tests revealed that participants with less than 5 years of experience scored higher on Physiological Pathways and Relationship and Networks than those with 10+ years. For Systems of Power, those with less than 5 years scored higher than participants with 5–10 years and 10+ years of experience (p < .05).

Interpersonal contact with LGBTQIA+ individuals. Having an LGBTQIA+ family member was associated with significantly lower Systems of Power scores (t(N) = -2.48. p = .014). No significant differences were observed in the other dimensions (p > .05). Having an LGBTQIA+ friend was linked to significantly higher scores in Physiological Pathways (t = 5.31. p < .001). Relationship and Networks (t = 4.86. p < .001), and Individual Factors (t = 3.50. p = .001), but lower scores in Systems of Power (t = -2.06. p = .040),indicating a complex pattern of associations between personal contact with LGBTQIA+ individuals and health care providers' knowledge and practices relevant to LGBTQIA+ care.

It was shown that the Sexuality IAT scores of the participants who did not have LGBTQIA+ family members were significantly higher than those who had LGBTQIA+ family members (p <0.001), Moreover, participants who did not have LGBTQIA+ friends demonstrated significantly higher scores on both the Sexuality IAT and the Transpictures IAT compared with those who reported having LGBTQIA+ friends (p = 0.001 and p = 0.19, respectively). No significant relationships were found in terms of other variables

(p >0.05) (Table 4). These findings should be interpreted cautiously, as subgroup sizes may have been limited. Although different forms of personal contact with LGBTQIA+ individuals appeared to be associated with differing levels of implicit attitudes, these associations should be considered exploratory rather than definitive. Alternative explanations, including pre-existing attitudes, contextual differences in interpersonal relationships, or unmeasured social factors, may also contribute to these findings.

	Sexuality		**Transpictures**	
Age				
20-29	0.24±0.38	F=1.794	0.16±0.38	F=0.466
30-39	0.24±0.42	p=.169	0.15±0.39	p=.628
39+	0.42±0.41		0.25±0.32	
Level of education				
High School	0.12±0.48		0.04±0.36	
Bachelor	0.31±0.38	F=1.403	0.20±0.37	F=0.956
Master	0.20±0.39	p=.243	0.16±0.38	p=.415
Speciality in medicine / PhD	0.26±0.43		0.11±0.39	
Workplace settings				
Research and Training Hospital/ State	0.26±0.40		0.20±0.37	
Research and Training Hospital/ Private	0.48±0.29	F=1.437	-0.05±0.38	F=0.753
State Hospital	0.34±0.34	p=.213	0.15±0.35	p=.585
Primary Healthcare Services	0.11±0.44		0.16±0.37	
Private Hospital	0.17±0.47		0.14±0.40	
I do not want to specify	0.27±0.29		0.20±0.40	
Profession				
Nursing	0.27±0.39	t=1.445	0.17±0.38	t=-0.154
Physican	0.14±0.46	p=.150	0.18±0.31	p=.878
Working experience (in years)				
Less than 5 years	0.22±0.40	F=0.946	0.16±0.37	F=0.172
5-10 years	0.29±0.39	p=.390	0.16±0.39	p=.842
Over 10 years	0.32±0.41		0.20±0.36	
Whether they have an LGBTQIA+ family member				
Yes	-0.11±0.50	t=-3.554	0.06±0.39	t=-1.060
No	0.29±0.38	p<.001**	0.17±0.37	p=.291
Whether they have an LGBTQIA+ friend				
Yes	0.17±0.41	t=-3.511	0.10±0.38	t=-2.359
No	0.36±0.35	p=.001**	0.23±0.36	p=.019*

Table 4. Comparison of IAT Scores with the Demographic Variables (n=194)

Statistics: t: Independent Samples T-test; F: One Way ANOVA; **p<0,01; *p<0,05

No significant associations were found between participants' knowledge and practices and their Sexuality and Transpictures IAT scores (p > 0.05). However, significant positive correlations were identified among several domains: a moderate positive correlation was found between Physiological Pathways and Relationship and Networks (r = .562, p < .01), while a low positive correlation was identified between Physiological Pathways and Systems of Power (r = .149, p < .05). Physiological Pathways was also moderately positively correlated with Individual Factors (r = .455, p < .01). Relationship and Networks demonstrated a high positive correlation with Individual Factors (r = .781, p < .01) and a low positive correlation with Systems of Power (r = .158, p < .01). Additionally, Systems of Power showed a low positive correlation with Individual Factors (r = .188, p < .01). A low positive correlation was also found between Sexuality IAT and Transpictures IAT scores (r = .248, p < .01) (Table 5).

Table 5. The Correlation Between Knowledge and Practices to Address Care Needs of LGBTQIA+ Individual-Survey and IAT Tests

		A	B	C	D	E	F
A. Physiological Pathways	r	-					
B. Relationship and networks	r	.562**	-				
C. Systems of power	r	.149*	.158**	-			
D. Individual factors	r	.455**	.781**	.188**	-		
E. Sexuality IAT	r	-.113	-.016	.015	-.024	-	
F. Transpictures IAT	r	-.085	-.012	.030	-.094	.248**	-

**p<0,01; *p<0,05; A. Physiological Pathways; B. Relationship and networks; C. Systems of power; D. Individual factors; E. Sexuality IAT; F. Transpictures IAT

4. Discussion

Consistent with global findings, our results show that healthcare providers in Türkiye exhibit implicit attitudes favoring heteronormativity and cisnormativity (Sexuality IAT D = 0.26; Transpictures IAT D = 0.17). This aligns with systematic reviews demonstrating that healthcare professionals carry the same level of implicit attitudes as the general population across various social dimensions—race, gender, obesity—and that these implicit attitudes have been negatively linked to qualify of care (37). Even in the absence of explicit bias, subtle normalized preferences heteronormativity, and cisnormativity prevail among HCPs globally (38–40). HCPs with stronger implicit bias often provide suboptimal communication, less patient-centered care, and may make poorer treatment decisions (37).

Another finding revealed a dissociation between the participants' implicit attitudes and their knowledge and practice levels measured by the self-report questionnaire. A similar finding was reported by Çataldaş et al. (41) from their recent study that found no association between nursing students' attitudes toward transgender individuals and their implicit attitudes. This dissociation aligns with broader evidence showing that implicit and explicit attitudinal processes often diverge, including meta-analytic findings that consistently demonstrate weak links between the two, particularly in socially sensitive domains (42). One possible

explanation for this dissociation may be social desirability bias, whereby participants may have consciously reported more favorable knowledge and practices toward LGBTQIA+ individuals while implicit measures reflected automatic associations favoring heteronormativity and cisnormativity. However, this interpretation should be considered cautiously. Alternative explanations may include conceptual differences between implicit and self-reported measures, restricted variability in self-reported responses, and methodological limitations inherent in reaction-time-based implicit measures. This dissociation may also be understood within theoretical frameworks emphasizing the dual nature of attitudes. According to the Dual Attitude Model (43) and the MODE model (44), individuals may simultaneously hold consciously controlled expressions and automatic implicit associations that do not align. This divergence tends to be particularly pronounced in socially sensitive domains, such as those involving sexual and gender diversity, where participants may feel pressure to report favorable responses while their implicit measures continue to reveal underlying biases.

It is also important to acknowledge the ongoing debate regarding the extent to which healthcare professionals' self-reported practices reflect their actual practices when providing care for LGBTQIA+ individuals. Although our findings indicate a dissociation between participants' implicit attitudes and their reported practices, it is not necessarily the case that implicit attitudes always translate into practices (42). Professionalism, ethical commitments, and clinical training can enable healthcare providers to deliver equitable and culturally humble care even when their implicit attitudes do not fully align with these practices. It is therefore possible that participants in our study engaged in equitable care practices despite holding implicit biases toward LGBTQIA+ individuals.

4.1 Professional and Educational Factors

Our findings indicate that healthcare providers with higher levels of education—such as those holding a bachelor's degree, medical specialization, master's degree, or PhD, scored significantly better in Physiological Pathways, Relationship and Networks, and Individual Factors. This suggests that advanced education not only imparts clinical expertise but also enhances awareness of social determinants and inclusive practices relevant to LGBTQIA+ care. These results are consistent with prior research indicating that education and structured training are strongly associated with improved cultural competence and reduced bias among healthcare professionals (45, 46). Furthermore, education and clinical exposure to LGBTQIA+ health issues has been linked to improved attitudes and readiness to care for LGBTQIA+ patients (3, 47).

Interestingly, participants with fewer than five years of professional experience scored higher across most knowledge and practice dimensions compared to their more experienced counterparts. This trend may reflect recent curricular reforms that increasingly integrate diversity, equity, and inclusion content into health education programs, as well as generational shifts toward more progressive attitudes on gender and sexuality (3, 48). Together, these findings underscore the need to sustain and expand educational interventions at both undergraduate and postgraduate levels to ensure that inclusive practices become a standard component of healthcare. A systematic review by Morris et al (3) identified key curricular strategies for healthcare education which include incorporating reflective exercises, using narrative exemplars of LGBTQIA+ individuals and bias-awareness training.

4.2 Systemic Barriers and Context in Türkiye

The lack of significant differences by profession and workplace settings of participants suggests entrenched systemic patterns transcending individual demographics. In Türkiye, qualitative studies have documented persistent stigmatization and marginalizing discourses that LGBTQ+ individuals experience in healthcare contexts: being treated "as if we're sick," facing judgmental nonverbal cues, and encountering segregating narratives in clinical interactions (49, 50). The implicit and explicit biases are expressed via persistent stigmatization and marginalizing discourses that shape health care environments that in turn contribute to LGBTAI+ patients' distrust and avoidance of care. Similarly, Sileo et al. (51) identified knowledge deficits, transphobia, cisnormative procedures, and workplace culture as important contributors to LGBTQIA+ stigma in healthcare settings. Their findings further emphasize the need for inclusive organizational policies, LGBTQIA+-focused education, and institutional support to reduce healthcare inequities.

The findings of the recent studies conducted in Türkiye support the present findings. Şişman et al. (52) reported that transphobic attitudes of nurses were associated with factors such as homophobia, limited transgender health education, lower comfort levels when working with transgender individuals, and negative familial attitudes, findings that closely parallel the current results.

Similarly, Polat et al. (30) emphasized that gender-affirming healthcare in Türkiye is shaped not only by individual provider attitudes but also by broader sociopolitical and institutional barriers. Their multidisciplinary care model highlighted the importance of structured education, interprofessional collaboration, and institutional support in promoting inclusive transgender healthcare. Consequently, these context-specific studies reinforce the need for both educational and systemic interventions to improve LGBTQIA+ healthcare practices in Türkiye.

4.3. Limitations

The study has several limitations. First, difficulties related to the online application used for the Implicit Association Tests resulted in approximately 30% of participants being unable to complete it. Specifically, some participants could not access the test at all, while others initiated it but were unable to finish due to challenges in navigating or operating the application. This loss of data may have introduced selection bias. Comparisons between participants who completed the IATs and those who did not revealed that participants who completed both the Sexuality IAT and the Transpictures IAT procedures were significantly younger than non-completers. However, no significant differences were observed regarding the questionnaire domain scores, including Physiological Pathways, Relationship and Network, Systems of Power, and Individual Factors. These findings suggest that technological familiarity or accessibility may have influenced IAT completion rates rather than substantial differences in knowledge or practices. Nevertheless, the possibility of selection bias cannot be fully excluded.

Second, the cross-sectional design captures attitudes, knowledge, and practices at a single time point, precluding the ability to assess changes over time or causal relationships. Third, the sample consisted predominantly of nurses, while physicians and other healthcare professionals were represented to a lesser extent. Therefore, the findings may primarily reflect the perspectives and experiences of nurses rather than all healthcare providers, and should be interpreted cautiously when generalized to other professional groups. Fourth, self-reported data on knowledge and practices may be subject to social desirability or recall biases, potentially inflating positive responses regarding care behaviors toward LGBTQIA+ individuals.

Fifth, the “Knowledge and Practices to Address Care Needs of LGBTQIA+ Individuals Questionnaire” was researcher-developed and did not undergo comprehensive psychometric validation procedures such as exploratory or confirmatory factor analysis. Although the questionnaire was theory-informed, expert-reviewed, and demonstrated high internal consistency, the findings derived from this instrument should be interpreted cautiously.

These results indicate that HCPs may hold negative implicit attitudes toward LGBTQIA+ individuals; however, there is therefore a need to enhance their awareness at the individual, social, and systemic levels as previous studies have found that healthcare providers’ knowledge, implicit attitudes and practices directly impact the quality of care and patient outcomes.-This study highlights the need for targeted educational interventions to ensure equitable care. It is important that clinical environments integrate structured education on LGBTQIA+ health needs within both undergraduate and continuing professional education (48). This includes training on gender-affirming practices, use of inclusive language, and strategies to mitigate implicit bias during patient interactions.

Implicit attitudes, though often unconscious, can influence clinical decision-making, communication quality, and patients’ willingness to disclose relevant health information. These biases, when unaddressed, may perpetuate health disparities and undermine trust between patients and providers. Addressing both implicit and explicit attitudes requires a multifaceted approach involving education, training, and systemic reform. Interventions such as cultural humility training which involves ongoing self-reflection, recognition of power imbalances in healthcare, and the creation of equitable, collaborative partnerships and structured curricula have been introduced in medical education to enhance preparedness and reduce bias (53). Methods like perspective-taking, mindfulness meditation, and intergroup contact have shown promise in reducing implicit bias among providers (54, 55). Moreover, institutional policies should support an inclusive healthcare culture through non-discrimination statements, gender-neutral documentation, and visible signs of LGBTQIA+ inclusivity in care environments. These systemic changes can foster safer spaces for LGBTQIA+ individuals, and thus help ensure health care seeking and, in so doing, ultimately contribute to reducing health inequities.

5. Conclusion

This study contributes to the understanding of healthcare providers' knowledge, attitudes, and practices related to LGBTQIA+ health in Türkiye—a context where research on this topic remains limited. The findings from this sample of healthcare providers, which predominantly consisted of nurses, reveal that while explicit knowledge and practices toward LGBTQIA+ care showed moderate levels, implicit biases persist, particularly among those lacking personal contact with LGBTQIA+ individuals. Education level and years of professional experience were significant predictors of knowledge and practice, suggesting that curricular content and recent training initiatives may positively influence inclusivity in healthcare delivery.

The absence of significant correlations between implicit bias scores and reported knowledge or practices underscores the complexity of implicit attitudes and the need for interventions beyond traditional knowledge-based training. To promote health equity, future health care initiatives should prioritize comprehensive education, intergroup contact opportunities, and organizational policies aimed at mitigating implicit bias and fostering inclusive environments. These strategies can enhance trust, improve patient-provider communication, and ultimately advance equitable healthcare for LGBTQIA+ individuals in Türkiye.

Abbreviations

AJN
American Journal of Nursing
ATTI
Attitudes Toward Transgendered Individuals
ETR
Education, Training and Research
HCPs
Healthcare Providers
IAT
Implicit Association Test
LGBTQIA+
Lesbian, Gay, Bisexual, Transgender, Queer, Intersex, Asexual, and Plus
MODE
Motivation and Opportunity as Determinants

Declarations

Ethics approval and consent to participate

Ethical approval was obtained from the Koç University Committee on Human Research, Approval No: [2023.033.IRB3.017] and written informed consent was obtained from all participants. I confirm that all methods were performed in accordance with the relevant guidelines. All procedures were performed in accordance with the ethical standards laid down in the 1964 Declaration of Helsinki and its later amendments.

Clinical trial number

Not Applicable

Consent to publish

Not Applicable

Competing interests

The authors declare no competing interests.

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Author Contribution

Seda Karakaya Çataldaş (SK) and Joanna Anneke Rummens (JAR) contributed to the conceptualization and research design of the study. SK, JAR, Erin Ziegler (EZ), Esra Ummak (EU), Cemile Hürrem Ayhan (HA), and Fahriye Oflaz (FO) contributed to the design of the data collection instruments. Data collection and data analyses were conducted by SK. Interpretation of the findings was performed by EZ, SK, JAR, EU, HA, and FO. Manuscript drafting, critical revision for important intellectual content, final approval of the version to be published, and agreement to be accountable for all aspects of the work were contributed to by SK, JAR, EZ, EU, HA, and FO.

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Data Availability

The data that support the findings of this study are openly available in Mendeley Data at DOI: 10.17632/ghz592wjzb.1 (https://data.mendeley.com/datasets/ghz592wjzb/1)

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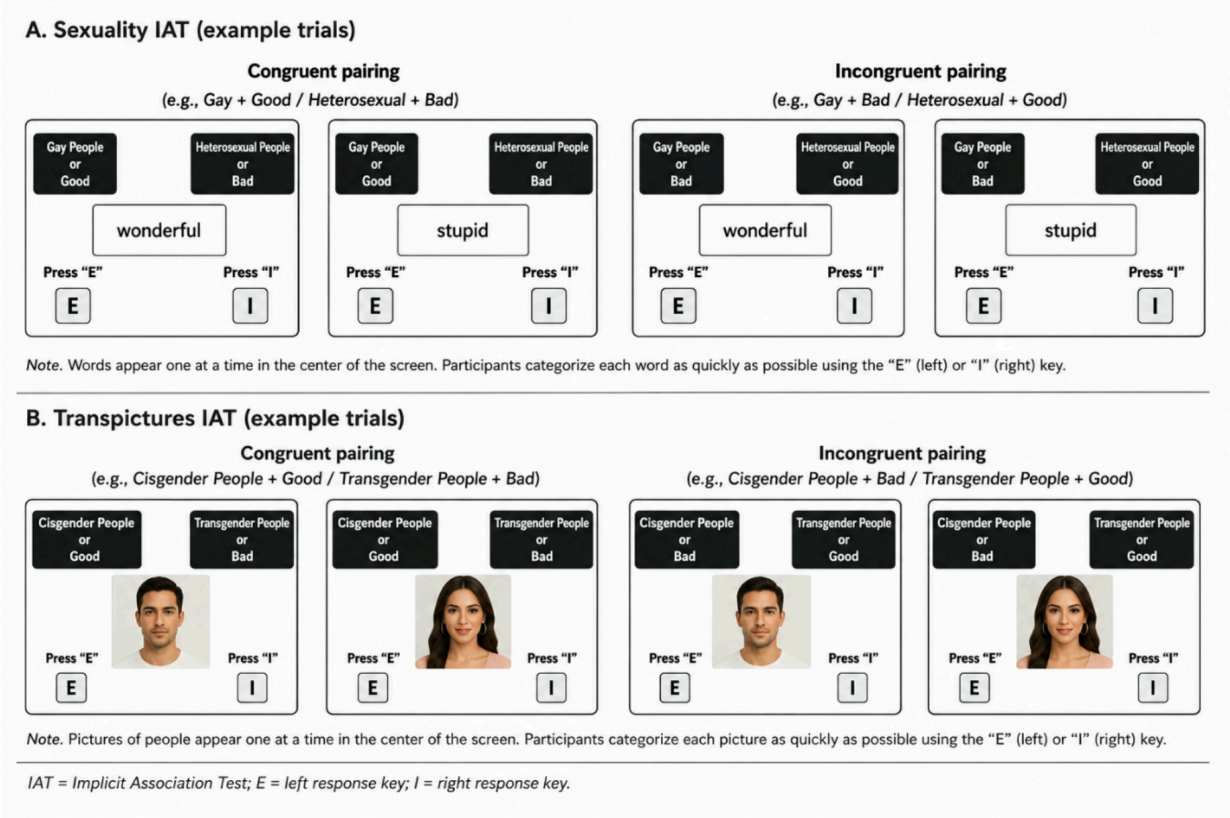
2023;10(4):589–99.

Figures

Figure 1. Example congruent and incongruent trial screens from the Sexuality IAT and Transpictures IAT



Note. The figure was generated for illustrative purposes using artificial intelligence-assisted visual support (ChatGPT, OpenAI).

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Figure 1

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