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Political conservatism and social distancing from people living with HIV among Medical students: mediating roles of negative stereotypes and negative Intergroup emotions

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Abstract

Background HIV-related stigma within the health care system is a major barrier preventing people living with HIV (PLWH) from accessing and continuing treatment. Psychosocial factors such as political orientation, personality characteristics, and personal moral values of health care providers have not been adequately investigated. Furthermore, a deeper understanding of the mechanisms and effects of these drivers on social distancing from PLWH is needed. The present study aims to fill these gaps in the literature by examining the stigmatizing attitudes of medical students from the perspective of the inevitability of prejudice.

Method We sampled 609 medical students in Türkiye. Political orientation, stereotyping attitudes, stigmatizing attitudes, emotional reactions toward PLWH, and social distance from PLWH were assessed via self-reported questionnaires. Multiple regression analysis and serial mediation analysis were used.

Results Political conservatism correlated significantly with negative stereotypes ($r=.29$, $p<.01$) and negative intergroup emotions ($r=.35$, $p=.01$). Notably, negative stereotypes were strongly associated with social distancing ($r=.41$, $p<.01$). Serial mediation analysis indicated that the total effect of political conservatism on social distancing was significant. The serial indirect association between higher political conservatism and higher social distancing from PLWH was significant ($\beta=0.07$, SE = 0.01, 95% CI [0.05, 0.10]). This association was mediated first by endorsing negative stereotypes about PLWH and then by negative intergroup emotions toward PLWH.

Conclusions The findings suggest that interventions targeting stereotyping and negative intergroup emotions could reduce discriminatory attitudes and behaviors of medical students, thereby enhancing healthcare delivery to PLWH. Policy measures can focus on the integration of stigma-reduction training and intergroup sensitivity programs in medical education curricula. Furthermore, it may help to address discrimination in the healthcare system and beyond by enhancing understanding of structural and societal factors that drive HIV-related stigma.

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Keywords HIV, HIV-related stigma, Political conservatism, Negative stereotypes, Negative intergroup emotions, Social distancing

Introduction

HIV/AIDS (Human Immunodeficiency Virus/Acquired Immune Deficiency Syndrome) has remained a significant medical challenge globally for the last 40 years. By the end of 2020, it has been estimated that 37.7 million people worldwide were living with HIV [1]. In recent years, advances in antiretroviral therapy have increased the life expectancy of people living with HIV (PLWH) and turned HIV into a chronic disease [2]. However, this did not change HIV's status as an important public health issue since not all PLWH adhere to treatment regimens (mostly due to psychosocial factors, including stigma), which results in worse health outcomes, both physically and psychologically.

HIV-related stigma has negative effects on the psychological well-being of PLWH and can be defined as "prejudice, discounting, discrediting, and discrimination directed at people perceived to be living with HIV" [3]. PLWH may experience that their HIV status is an extremely socially devalued aspect of their self, and HIV-related stigma at an individual level may cause a significant barrier to HIV prevention and treatment [4–9]. Fear of stigmatization is frequently associated with avoiding testing for HIV and reduced utilization of prevention services [10]. PLWH who experience stigma may be less likely to disclose their HIV status because of a fear of social rejection [11]. There is also evidence indicating that HIV-related stigma is associated with suboptimal health behaviors and outcomes, such as treatment non-adherence, visit non-adherence, and not achieving viral suppression [12, 13].

HIV-related stigma among health care providers (HCPs) was first described in the late 1980s and early 1990s [14]. Stigmatizing attitudes are expressed through nonverbal behaviors such as avoidance of eye contact and physical proximity [15], expression of discomfort [16], lack of touch [17], deferring prescribing antiretroviral therapy for active injection drug users [18], or differential treatment, such as the use of excessive isolation measures or precautions, alongside with some overt cases of discrimination such as PLWH being verbally abused or gossiped about by health care workers [19], having their confidentiality breached [20], or being denied care [21]. HIV-related stigma within the health care system is a major barrier preventing PLWH from accessing and continuing treatment [22] due to reduced trust in physicians and thus may contribute to poorer health outcomes [23], such as low quality of life and poor ART adherence [24], partly via increased internalized stigma and depressive symptoms [25]. PLWH who experience HIV-related stigma in healthcare settings report emotional reactions such as humiliation and depressive symptoms, as well as lower treatment adherence [24, 26, 27]. It has also been reported that PLWH who perceive HCPs to have a lower willingness to care and higher stigmatizing attitudes have lower treatment retention [28].

Fear of contracting HIV, being unaware of stigmatizing attitudes and their potential consequences, and associating HIV acquisition with immoral behavior can be some of the major reasons for HIV-related stigma by healthcare workers [10]. Medical students, as future physicians, will play a crucial role in the care of PLWH in the coming years. Studies suggest the presence of stigmatizing attitudes toward PLWH among medical students in the US [29] and in China [30], as well as correlates of negative beliefs regarding testing, confidentiality, the environment of care, disclosure toward PLWH [31], and decreased intention to treat [32], not just among medical students, but also among dental hygiene workers [33] and dental education students [34].

Possible drivers of stigmatizing attitudes among HCPs and medical students, such as level of knowledge about HIV and its transmission routes, lack of training about stigma, and fear of contracting HIV when caring for PLWH, have been studied [35, 36]. Most of the interventions that aim to reduce HIV-related stigma tend to focus on information and knowledge [37, 38]. However, this may not be enough for a sustained or prolonged behavior change. Emotions toward PLWH may play a major role in stigmatization by ensuring the social transmission of negative thoughts and fueling negative behaviors [39]. Nevertheless, the role of emotional reactions on HIV-related stigma has not been widely studied. Specifically, there is limited knowledge of how political orientations contribute to stereotypes and emotional responses to impact stigmatizing attitudes in medical students. In a study conducted on HCPs in training, negative emotions such as fear, pity, and embarrassment toward PLWH were reported when discussing potential interactions with PLWH. Furthermore, some HCPs expressed a need to control their emotional responses when serving stigmatized patients [39]. Another study suggests that although changing medical students' knowledge about HIV does not influence reducing stigmatization, experiencing more positive emotions in interactions was associated with lower levels of subsequent stigma for intervention participants [37]. Furthermore, a study suggested that perceptions of policy enforcement of HCPs, alongside being male, Protestant, and White, are significant predictors of HIV-related stigma among HCPs [40]. However, other

psychosocial factors that may contribute to stigmas, such as political orientation, personality characteristics, and personal moral values of HCPs, have not been adequately investigated. Impotantly, a deeper understanding of the mechanisms of the effects of these drivers on social distancing is needed.

In this study, we aim to fill these gaps in the literature by studying stigmatizing attitudes of medical students from the perspective of *the inevitability of prejudice*. The inevitability of prejudice refers to the notion that biases against certain social groups are an inherent part of human psychology and social interaction. This perspective suggests that individuals often categorize others based on perceived group memberships, leading to negative attitudes and stereotypes for outgroups, which can be difficult to eliminate due to deep-rooted cognitive processes and social identity dynamics. Many classic theorists have suggested that prejudice is an inevitable consequence of the process of categorizing people and stereotyping them. The basic argument is that as long as stereotypes exist, people's tendency to categorize others using these stereotypes will lead them to perceive others as members of a certain group rather than as unique individuals, resulting in prejudice [41–43]. Thus, Tajfel (1969), in his seminal work, argues that "cognitive aspects of prejudice" constitute an important stigma mechanism, which eventually leads to social distancing and social exclusion of individuals with stigmatized conditions [44, 45].

According to a modern theoretical formulation, stigma processes include several steps [46]. The first step is distinguishing and labeling differences among individuals. The second step is applying stereotypes to certain individuals, and the third step is creating a distinction between stigmatized individuals and the rest of society. Finally, stigmatized individuals experience status loss, negative attitudes, discriminatory behavior, and social distancing from others. Stigma mechanisms, including prejudice, stereotypes, and discrimination, may result in increased social distancing from PWLH, lower rates of HIV testing, and higher support for rigid public policies toward PLWH [47–49]. In the case of the link between social conservatism as a political view and stigmatizing attitudes toward PLWH, a causal model developed to examine the relationship between variables associated with social conservatism and HIV-related stigma suggests that in the general population, conservatism variables such as right-wing authoritarianism, homophobia, false beliefs relating to HIV, and social dominance orientation predict stronger prejudicial attitudes towards PLWH [48]. In another study, it has been reported that individuals who describe themselves as holding more conservative values have stronger prejudicial and stereotypical attitudes toward PLWH [50]. The behavioral immune system (BIS) theory emphasizes psychological and behavioral mechanisms that encourage disease avoidance and proposes that political conservatism is associated with relevant emotions and cognitions such as disgust and perceived disease vulnerability [49].

In this paper, we hypothesized that medical students who are more conservative politically can have a stronger tendency to endorse negative stereotypes about PLWH, with downstream effects on stigma and social distancing [46]. We propose that one important mediating factor in the association between stereotyping and social distancing is the negative emotions toward members of the stigmatized group. Based on the link between cognition and emotions proposed by appraisal theories of emotion [51–54], we argue that stereotypes lead to negative emotions directed at stigmatized individuals [55, 56]. These negative emotions, in turn, may lead to social distancing from stigmatized individuals [57, 58]. Thus, in a sample of medical students, we examined a serial mediation model that has been proposed for other stigmatized conditions [59, 60]: Political conservatism → Negative Stereotypes about PLWH →Negative Intergroup Emotions toward PLWH → Social Distancing from PLWH. This study applies a serial mediation model for the first time to provide greater insight into the mechanisms contributing to the association between political orientation and stigma processes in medical students. It contributes to the literature by elucidating that political conservatism is associated with negative stereotypes about PLWH, identifying the potential intergroup emotions contributing to stigma processes and distancing from PLWH, all of which may inform future interventions that could be implemented to lower discrimination and increase social support for PLWH within the healthcare system.

Materials and methods

Participants and procedures

A cross-sectional survey was conducted between March 2021 and June 2021 among 609 medical students at Izmir Katip Celebi University in Izmir, Turkey. Ethical approval was obtained from the Non-Interventional Research Ethics Committee at Izmir Katip Celebi University, Izmir, Turkey (IRB CODE: 18.02.2021/52). Medical students were chosen as the study population as they are the next generation of healthcare providers who will directly work with PLWH. Critical exposure to issues of medical ethics, patient care, and public health issues places this population in a prime position for exploring attitudes toward HIV-related stigma. Also, cultural beliefs and social norms in the Turkish context can affect their perceptions and attitudes toward PLWH [61, 62]. Such dynamics are important to understand, as the attitudes of medical students can influence their future practice as clinicians and have an impact on healthcare environments

for PLWH. Participants completed the survey online and via the Qualtrics survey tool and actively completed the informed consent before they filled out the survey. Participants were informed of the confidentiality and anonymity of their responses and the right to withdraw at any point in the study.

Materials

Demographics and political orientation

Age, gender, current grade in medical school, religiosity, having any relatives/friends who are living with HIV, and history of caring for any PLWH were assessed. Political orientation was assessed with the question, "How would you describe your political stance generally?" and participants indicated their political orientation on a 7-point scale (strongly conservative 1–7 strongly liberal). Responses were reversed so that higher scores indicate stronger conservatism [63].

Stereotype endorsement

Endorsement of stereotypes related to PLWH was assessed via the stereotyping subscale of the Healthcare Provider HIV/AIDS Stigma Scale [64]. The stereotyping subscale consists of 11 statements (e.g., I think people would not get HIV if they had sex with fewer people). Respondents indicated their level of agreement using a 6-point Likert type scale (strongly disagree 1–6 strongly agree).

Stigmatizing attitudes toward PLWH

Stigmatizing Attitudes toward PLWH were assessed using the "Stigmatizing attitudes towards people living with HIV scale" adapted from Stringer and colleagues [40]. This subscale consists of six statements (e.g., People living with HIV should feel ashamed of themselves), which were scored using a 5-point Likert type scale (strongly disagree 1–5 strongly agree), with higher scores indicating a higher stigmatizing attitude.

Intergroup emotions

Emotional reactions toward PLWH were assessed using an adapted version of the scale first used by Mackie, Devos, and Smith [57]. Participants indicated to what extent PLWH makes them feel each emotion (disgusted, angry, hateful, furious, uncomfortable, nervous, disconcerting, fearful, worried, joyful, happy, pleasant, confident, friendly, and comfortable) using a 5-point Likert-type scale (not at all 1–5 extremely). Responses for positive emotions (e.g., joyful, happy) were reverse-coded so that higher scores indicate having more negative intergroup emotions toward PLWH.

Social distance from PLWH

Social distance from PLWH was assessed via the Social Interaction Scale (SIS), which describes seven common social interactions that might take place with PLWH [65]. Respondents indicate their willingness to interact with the person in each vignette. Each item is rated on a bipolar 7-point scale. The lower the score, the more willing the respondent is to interact with PLWH. That is, higher scores indicate higher social distancing.

HIV Knowledge

HIV knowledge was assessed using a researcher-made questionnaire (see supplementary file) consisting of two distinct scales. To establish the content validity of the researcher-developed questionnaire, we conducted a thorough literature review to identify key constructs and dimensions related to HIV knowledge. Experts reviewed the initial draft to ensure the items accurately capture these constructs, followed by pilot testing with a small sample of medical students to assess clarity and relevance. Based on feedback, we revised the items and conducted a final expert review to confirm content validity.

First, participants were presented with a list of 11 potential routes of HIV transmission (e.g., kissing, mosquito bites, vaginal sex) and asked to identify the correct ones. Responses were coded as 1 for each correct route selected, while incorrect routes were left blank, resulting in an accuracy score ranging from 0 to 11. Second, participants answered nine true-false questions designed to evaluate their understanding of HIV transmission and treatment. Each correct answer received a score of 1, while incorrect responses received a score of 0, leading to a total accuracy score between 0 and 9. Sample questions included: "HIV transmission from mother to child during pregnancy, labor, and delivery may be prevented," "Antiretroviral therapy is recommended for all people living with HIV," and "All people living with HIV have AIDS." The accuracy scores from both scales were then combined to generate a final score for analysis. Higher scores indicated better knowledge regarding HIV.

Data analysis strategy

To test our main hypothesis, multiple regression analyses and serial mediation analysis were used to examine whether a more conservative political orientation would lead to endorsing negative stereotypes about PLWH more, which in turn leads to having negative intergroup emotions toward PLWH, which in turn leads to social distancing from PLWH, utilizing the indirect effects analysis with bootstrapping [66]. A significant serial indirect effect, indicated by a confidence interval that does not include zero, suggests serial mediation. For this serial mediation analysis, we adjusted for covariates that were identified as important by previous research: age, sex,

Table 1 Descriptive statistics ($n = 609$)

	n	%
Gender		
Male	283	46.5%
Female	326	53.5%
Have you got any formal education related to HIV?		
Yes	336	55.2%
No	273	44.8%
Do you have a relative or friend who is HIV positive?		
Yes	17	2.8%
No	592	97.2%
Have you ever given clinical care to an HIV-positive patient?		
Yes	66	10.8%
No	543	89.2%
	Mean	*SD*
Age	21.98	1.97
Current Grade in Medical School	3.74	1.39
Religiosity	3.11	1.62
Political Orientation (conservative 1–7 liberal)	5.08	1.34

grade in medical school, having an HIV-positive relative or a friend, having provided medical care to an HIV-positive patient in the past, knowledge about ways of HIV transmission, and religiosity. All analyses were performed using SPSS [67], and the serial mediation analysis was performed with 2000 Bootstrap samples using PROCESS v.4.0 [66].

Results

Descriptive statistics for the sample are presented in Table 1. Zero-order correlations among study variables are presented in Table 2. Political conservatism, endorsing negative stereotypes about PLWH, and negative intergroup emotions toward PLWH were all significantly associated with attitudes of social distancing from PLWH when entered into separate multiple regression analyses with all covariates included ($\beta = 0.18$, $SE = 0.04$, $p < .001$, $\beta = 0.39$, $SE = 0.07$, $p < .001$, $\beta = 0.62$, $SE = 0.06$, $p < .001$, respectively).

Next, we tested the serial mediating roles of endorsing negative stereotypes about PLWH and negative intergroup emotions toward PLWH in the association between higher political conservatism and attitudes toward social distancing from PLWH (Fig. 1). Our analysis revealed that the total effect of political conservatism on social distancing attitudes toward PLWH was significant (i.e., when the mediators: negative stereotypes and negative intergroup emotions were not in the model). However, this effect was no longer significant when these two serial mediators were introduced to the model. The serial indirect effect was significant, with $\beta = 0.07$, SE = 0.01, CI 95% (0.05, 0.10). As can be seen in Fig. 1, political conservatism was associated with the endorsement of negative stereotypes about PLWH. Endorsing stereotypes, in turn, was associated with negative intergroup emotions toward PLWH, ultimately resulting in stronger attitudes toward social distancing from this group. The beta values were 0.47 and 0.57 for the paths Negative Stereotypes → Negative Intergroup Emotions → Social Distancing, respectively, suggesting a medium effect size. Endorsing negative stereotypes about PLWH serves as a first step in this mediation process, which can amplify feelings of discomfort or alienation among individuals with higher political conservatism. Following negative stereotypes, negative intergroup emotions further exacerbate social distancing attitudes. Among the covariates examined, having an HIV-positive relative or friend emerged as a significant predictor of lower attitudes toward social distancing from PLWH ($\beta = -0.07$, SE = 0.24, $p = .036$). This finding suggests that personal connections to individuals affected by HIV can mitigate conservative biases and promote more inclusive attitudes.

Table 2 Zero-order correlations among demographic, sociocultural, and HIV-related stigma variables

	Male[a]	Age	Grade	Relig	HIVRel[a]	HIVCare[a]	HIVInf	PolLib	NegSt	NegIE
Age	0.1**									
Grade	< 0.001	0.73**								
Religiosity	−0.04	0.05	0.1*							
HIVRel	0.14**	0.18**	0.08*	−0.02						
HIVCare	−0.01	0.24**	0.36**	0.01	0.07					
HIVInf	−0.05	0.28**	0.43**	-,09*	0.1*	0.23**				
PolLib	−0.04	−0.08*	−0.09*	−0.56**	0.02	−0.02	0.1*			
NegSt	0.21**	0.06	0.06	0.27**	0.05	0.11**	−0.06	−0.35**		
NegIE	0.02	0.05	0.06	0.22**	−0.09*	0.01	−0.14**	−0.29**	0.5**	
SocDis	0.05	0.01	−0.01	0.22**	−0.11**	−0.004	−0.17**	−0.26**	0.41**	0.65**

Note. ** $P < .01$, * $P < .05$

a. For dichotomous variables, reference group = 0

Male = identifying as male; Grade = current grade in medical school; Relig = religiosity; HIVRel = having an HIV-positive relative or friend; HIVCare = given medical care to an HIV-positive patient; HIVInf = knowledge about ways of HIV transmission; PolLib = political liberalism; NegST = negative stereotypes about PLWH; NegIE = negative intergroup emotions toward PLWH; SocDis = attitudes of social distancing from PLWH

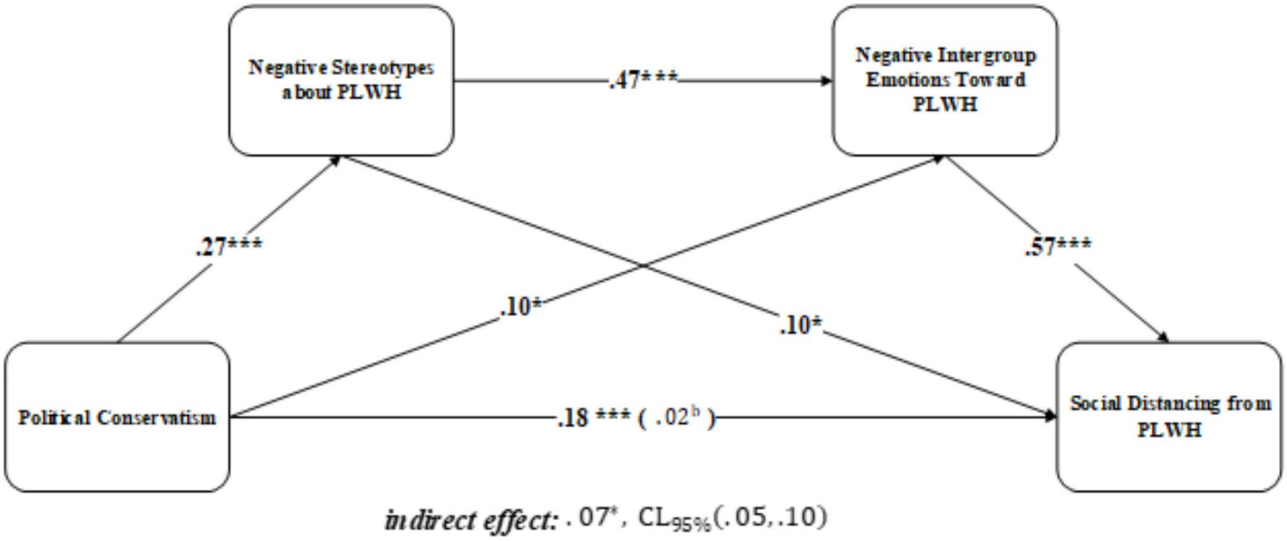


Fig. 1 Three-path mediation model for serial mediation analysis. ***Note.*** * $p < 05$. ** $p < 01$. *** $p < .001$ standardized path coefficients are shown. [b] = direct effect (when Negative Stereotypes about PLWH and Negative Intergroup Emotions Toward PLWH [two mediators] are in the model)

Discussion

Having negative stereotypes toward PLWH as medical students may shape future stigmatizing and discriminatory behavior as HCPs. HIV-related stigma in health care settings can pose significant threats to HIV care, and the investigation of potential root causes and mechanisms of these negative stereotypes, attitudes, prejudice, and behaviors is important. A recent study by Bayramoglu, Yigit, and Turan [68] suggests that conservative political orientation predicts negative attitudes toward PLWH in the general population. By utilizing the *inevitability of prejudice* perspective, we hypothesized that for medical students, a more conservative political orientation would lead to stronger endorsement of negative stereotypes about PLWH, which in turn will lead to negative intergroup emotions toward PLWH, which in turn lead to social distancing from PLWH, and found support for this serial mediation model.

Attribution theory [69] offers insight into the emotional responses toward those in need of assistance and the effects of emotional responses on willingness to help others instead of rejecting and excluding them socially. The theory suggests that perceived controllability (i.e., whether persons in need of help are to blame for their predicament) and perceived stability (i.e., whether an ailment is enduring) determine emotional responses, which in turn impact willingness to interact, help, and socially include. The mediating effect of emotion is a hallmark of Weiner's attribution theory. Attributions that lead to feelings of sympathy may result in greater acceptance and helping behavior, but attributions that lead to anger may increase avoidance and exclusion [55]. There is empirical support for the mediating effect of emotions on willingness to provide social support [57, 58].

People with stigmatized conditions can be socially excluded when they are perceived as a threat, physically or morally, to the self or the ingroup [70]. People tend to exhibit spontaneous and reflexive behaviors, such as avoiding physical contact and even proximity to stigmatized individuals [56]. Despite prominent success in HIV treatment and prevention during the last decades, stigmatizing attitudes toward PLWH are still widespread. Conservative values and beliefs, including right-wing authoritarianism, may be associated with tendencies to perceive certain individuals as more threatening than others [71]. Research suggests that political conservatism is a strong and reliable predictor of different types of prejudice toward vulnerable groups in the community, such as lesbian, gay, bisexual, and transgender (LGBT) individuals and PLWH [72].

In line with previous studies in the general population, we found that medical students who hold more politically conservative values exhibit stronger social distancing tendencies toward PLWH. Burges et al. (2019) examined the political ideology of medical students and its association with attitudes toward marginalized patients. Results suggested that stronger endorsement of conservative ideology was linked with greater implicit bias, negative explicit attitudes, lower empathy, and less patient-centered attitudes [73]. Lageman's (2022) research suggests that stigma and discrimination from socially conservative governments (i.e., the case of Brazil) create a negative impact on HIV testing rates. Overall, this indicates a wider trend within a society where right-wing conservatism shapes not only individual tendencies but also impacts public health policies that, in turn, produce negative effects on subsequent health results. In a similar vein, DeLuca and Yanos (2016) found that self-reported

conservatism and right-wing authoritarianism were significantly associated with negative stereotypes and greater social distance from individuals with mental illness. The association between right-wing authoritarianism and social distancing was mediated by negative stereotypes [74]. Another survey in Vietnam found that HIV/AIDS stigma is strongly associated with cultural values and social norms, as well as high levels of discrimination towards PLWH. The collectivistic culture in Vietnam may exacerbate stigma, as community perceptions heavily influence individual behaviors and attitudes toward PLWH [75].

HIV prejudice includes an emotionally valenced attitude or reaction towards PLWH and may include negative cognitive schemas or beliefs regarding PLWH [64]. Prejudice has an important role in generating discriminatory behaviors and social distancing toward PLWH [64]. Previous research assessing the relationship between stereotypes, prejudice, and social distancing by HCPs towards patients with mental illness and models of how group labels bias personal perception of university students toward gay people suggest that prejudice also mediates the association between stereotypes and social distance/discrimination [76, 77]. The emotions that arise from intergroup contact can lead to negative intergroup relations [78]. For example, intergroup anxiety can lead to negative intergroup communications or experiences. Lack of knowledge or experience with others can be partly responsible for this anxiety, which in turn can have negative impacts on social behaviors and lead to attitudes of avoidance. Avoidance is the most common response when experiencing anxiety.

The practical implications for medical education can be developed further. For example, educational interventions (e.g., knowledge modules and peer education programs) have been demonstrated to be effective in decreasing stigma among healthcare providers through understanding achieved by shared experiences with PLWH [79]. Moreover, elicitation of patients' testimonies within training modalities can optimize empathy levels among medical students [79, 80]. Policies supporting inclusive curricula that also function to confront stigma more directly are vital in informing the attitudes of future physicians [81]. To further reduce stigma around HIV-related issues in community settings, workshops designed to raise awareness have also proved beneficial [82].

Limitations

The primary limitation of this study is the reliance on self-report measures, which are potentially subject to bias. Participants may have underreported stigmatizing attitudes or overreported socially desirable perspectives. Future research could integrate other methods, such as implicit association tests or behavior observation, to mitigate self-report bias and provide a more precise picture of stigma-related constructs. Second, as a cross-sectional study, it cannot establish causal relationships. Although in some emotion-causation theories, it is assumed that cognition leads to emotional experience, other theories of emotion suggest that emotion may lead to cognition [83]. The hypothesized serial mediation model illustrates how cognitive, emotional, and behavioral factors are related; however, the direction of causality cannot be inferred in this study. Longitudinal designs are needed to assess the temporal ordering of variables, which is particularly important for stigma reduction interventions. Longitudinal approaches might also determine whether or not stigma attitudes and behaviors are antecedents of or outcomes of particular emotional, cognitive, or behavioral processes. Further research is needed on the cognitive and emotional components of interpersonal and intrapersonal processes related to stigma, discrimination, and social distancing.

Conclusions

The results of this study suggest that stereotypes and negative intergroup emotions toward PLWH can be targeted in efforts to reduce discriminatory behaviors among medical students. Recognizing these biases is critical to establishing an equitable healthcare environment [84]. De-stigmatizing attitudes in the healthcare system is key to accessing health services and adherence to treatment for PLWH. This is in line with global health movements, including the United Nations' Sustainable Development Goals (SDGs), to ensure healthy lives and promote well-being for all [85]. By providing educational interventions that address medical students' biases, we can better facilitate patient-provider relationships and work to advance universal health coverage. Such training programs could be integrated into curricula of medical education all over the world, emphasizing a patient-oriented approach. At the core of how to create lasting system-wide change, educational institutions can partner with health systems and community stakeholders. Programs such as SPACES (Stigma-free Spaces in Medical Scenarios) are successful in reducing negative attitudes through interactive training with affected individuals [86]. The current study suggests that there is still room for improvement in terms of reducing HIV stigma, with the need for targeted interventions to meet global health targets. Further research is required to determine the effectiveness of these interventions and their potential long-term value to health professionals and PLWH overall in different cultures.

Supplementary Information

The online version contains supplementary material available at https://doi.org/10.1186/s12909-025-06768-w.

Supplementary Material 1

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Author contributions
SAN. Conceptualization, Formal analysis, Investigation, Methodology, Project administration, Resources, Validation, Visualization, Writing– original draft, Writing– review and editing. HAR. Formal analysis, Methodology, Resources, Validation, Visualization, Interpreting the data drafted in the result section, Writing– original draft, Writing– review and editing. BT. Supervision, Conceptualization, Formal analysis, Investigation, Methodology, Project administration, Resources, Validation, Visualization, Interpreting the data drafted in the result section, Writing– original draft, Writing– review and editing.

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Data availability
Data are available from the first author upon reasonable request.

Declarations

Ethics approval and consent to participate
Ethical approval was obtained from the Non-Interventional Research Ethics Committee at Izmir Katip Celebi University, Izmir, Turkey. All participants signed informed consent.

Consent for publication
Done.

Competing interests
The authors declare no competing interests.

Clinical trial number
Not applicable.

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