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# Clinical competence and attitudes towards LGBT patients among medical residents in Japan

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## Abstract

**Background** Sexual and gender minorities face persistent health disparities, partly due to the limited competence of healthcare providers in LGBT-inclusive care. Although education can improve these skills, little is known about LGBT-related competence in non-Western contexts such as Japan, where LGBT health content is scarcely integrated into medical curricula and visibility remains limited.

**Methods** We conducted a nationwide cross-sectional study of postgraduate year-1 (PGY-1) residents in Japan from April to May 2025. The sampling frame comprised examinees of the GM-ITE administered at the start of PGY-1 training at participating training hospitals. Competence was assessed using the Japanese version of the Lesbian, Gay, Bisexual, and Transgender Development of Clinical Skills Scale, which comprises four subscales: Attitudinal Awareness, Basic Knowledge, Clinical Preparedness, and Clinical Training. Demographic and institutional factors were examined using univariable and multivariable linear regression.

**Results** Of 748 eligible residents, 280 completed the survey (response rate: 37.4%). Nearly half reported no LGBT-related education during medical school, and over 80% reported none during residency. The mean overall score on a 1–7 scale was 4.0, with higher scores for Attitudinal Awareness (5.3) than for Basic Knowledge (3.9), Clinical Preparedness (2.5), or Clinical Training (2.3). Female residents scored higher than male residents ( $\beta = 0.30$ , 95% CI: 0.15–0.45). Training in university or urban hospitals and older age were linked to higher preparedness and training scores.

**Conclusions** Among Japanese PGY-1 residents, LGBT-related clinical competence was moderate, with supportive attitudes but limited knowledge and preparedness. Scores were lower than those reported in Western studies, reflecting the limited integration of LGBT health into curricula. Structured LGBT education across medical training is needed to reduce disparities and promote inclusive care in Japan.

**Keywords** LGBT health, Clinical competence, Medical education, Postgraduate medical education, Medical residents, LGBT-DOCSS, Japan

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## Background

Sexual and gender minorities, including lesbian, gay, bisexual, and transgender (LGBT) individuals, face persistent health disparities. Compared with heterosexual and cisgender populations, LGBT people experience higher rates of psychological distress, suicidality, chronic illness, and barriers to healthcare access [1, 2]. These inequities are often exacerbated by experiences of discrimination within healthcare settings, where patients may fear bias, encounter inappropriate remarks, or even be denied appropriate care [3, 4]. Such encounters not only undermine trust but also contribute to avoidance of healthcare services, further widening health disparities [5]. A key factor underlying these inequities is the limited competence of healthcare professionals in providing LGBT-inclusive care, which encompasses not only clinical knowledge and skills but also attitudes and awareness of the unique needs of this vulnerable population [6]. Education and training have been shown to improve these competencies, making them a crucial strategy for reducing disparities and promoting equitable healthcare [7, 8].

In Japan, however, medical education on LGBT health remains underdeveloped despite increasing recognition of these issues. Municipal-level surveys estimate that approximately 2–3% of the population identify as LGBT [9]. International comparative survey data across multiple countries similarly suggest that the proportion of individuals reporting non-heterosexual orientations in Japan lies at the lower end of the international range [10]. A recent nationwide study of healthcare professionals reported experiences of discrimination against LGBTQ + patients and perceived workplaces as not consistently welcoming, highlighting cultural and training gaps [11]. In a nationwide web-based survey of physicians, 46% reported having never knowingly encountered an LGBT patient in the past five years, highlighting the limited clinical exposure that may shape providers' perceptions and training needs [12].

Japanese medical education follows a six-year curriculum, with basic science education in the early years and clinical clerkships in the latter half [13]. In 2016, the model core curriculum was revised to include, for the first time, learning objectives related to sexual orientation and gender identity, as part of its broader aim to develop professional physicians who can provide patient-centered care for diverse populations [14]. However, a national survey showed that medical schools devote a median of only one hour to LGBT-related instruction, less than in the United States or Canada, where a recent survey reported median (interquartile range) times of 4 (2–6) hours in preclinical training and 2 (0–3) hours in clinical training [15]. While limited curricular time is an important concern, LGBT-related competence may also

be related to how these topics are taught and to the surrounding learning environment. Taken together, these deficiencies in undergraduate training may contribute to the under-recognition of LGBT patients and underscore the importance of assessing how future physicians develop competence in LGBT-related health education.

Postgraduate residency is a critical stage in which physicians consolidate clinical competence, professional attitudes, and patient-centered practices. In Japan, residency begins immediately after graduation from medical school, meaning that competence at the beginning of residency largely reflects the outcomes of undergraduate education. However, little is known about the current level of LGBT-related competence among Japanese residents. The Lesbian, Gay, Bisexual, and Transgender Development of Clinical Skills Scale (LGBT-DOCSS) provides a validated measure of knowledge, attitudinal awareness, and clinical preparedness for LGBT care [16]. Its Japanese version (LGBT-DOCSS-JP) now enables evaluation in local contexts [17].

This study aimed to assess LGBT-related clinical competence among postgraduate year-1 (PGY-1) residents in Japan at the initial stage of residency training, using the LGBT-DOCSS-JP. PGY-1 residents were selected because their competence at the beginning of residency reflects outcomes of undergraduate medical education before substantial postgraduate experience. Specifically, we sought to (1) describe residents' levels of attitudinal awareness, basic knowledge, clinical preparedness, and clinical training; (2) identify demographic and institutional factors associated with competence; and (3) evaluate the extent of LGBT-related education received during medical school and the initial stage of residency.

## Methods

### Study design

We conducted a multicenter cross-sectional study in Japan during the 2025 PGY-0 GM-ITE administration period (4 April to 24 May 2025). Participants were surveyed immediately after completing the 'PGY-0' version of the General Medicine In-Training Examination (GM-ITE), an entrance assessment administered at the start of PGY-1. The study followed the *Strengthening the Reporting of Observational Studies in Epidemiology* (STROBE) guidelines, and the STROBE checklist is provided as Supplementary Material [18]; the study was approved by the institutional ethics committee.

The GM-ITE is a standardized, multiple-choice examination designed to evaluate residents' general clinical knowledge and its application in practice. It assesses both individual competence and training program quality, providing feedback for improvement. Participation is voluntary and coordinated by each training program. The PGY-0 version is offered only by training hospitals that

elect to participate in the JAMEP-administered program, and participating hospitals are generally similar to the national distribution, although institutions with higher educational motivation may be more likely to participate. The scores range from 0 to 80.

### Participants

Eligible participants were PGY-1 residents who took the GM-ITE 'PGY-0' in 2025. The participant flow is shown in Fig. 1. Immediately after the exam, they received an online questionnaire accompanied by an electronic consent form stating that participation was voluntary, responses were anonymous, and data would be used solely for research purposes. The consent form also clearly stated that the survey was entirely unrelated to GM-ITE scores or to any evaluation after enrollment. Only residents who provided informed consent and completed all LGBT-DOCSS-JP items were included in the analysis.

### Measurements

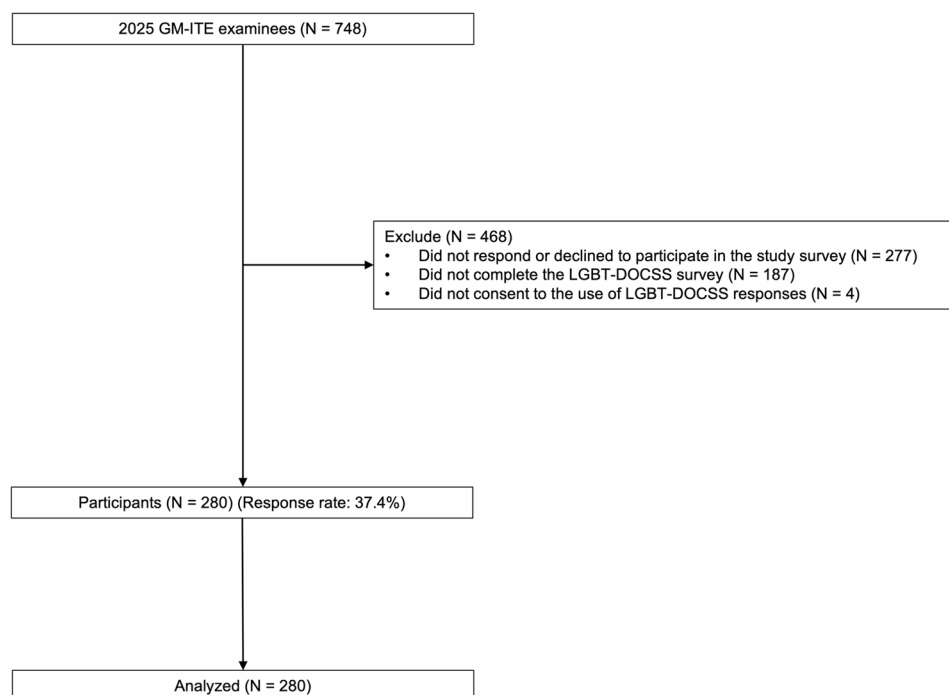
Competence in LGBT-related care was assessed using the LGBT-DOCSS, developed by Bidell in 2017 [16]. This 18-item instrument measures healthcare providers' knowledge, attitudes, and clinical skills in caring for LGBT patients. Each item is rated on a 7-point Likert

scale (1 = strongly disagree to 7 = strongly agree), with eight items (items 3, 4, 5, 7, 9, 12, 17, 18) reverse-scored.

The Japanese version (LGBT-DOCSS-JP), validated by Kanakubo et al. [17], was used in this study. The original LGBT-DOCSS comprises three subscales (Attitudinal Awareness, Basic Knowledge, and Clinical Preparedness), but in the Japanese validation study, factor analysis supported a four-factor structure in which two items on formal clinical training and supervision formed a distinct Clinical Training subscale, while the remaining items retained the original subscale composition. Accordingly, the LGBT-DOCSS-JP comprises four subscales: Attitudinal Awareness (items 3, 5, 7, 9, 12, 17, 18); Basic Knowledge (items 1, 2, 6, 8); Clinical Preparedness (items 4, 13, 14, 15, 16); and Clinical Training (items 10, 11).

For both total and subscale scores, raw scores were summed and divided by the number of items, producing a scale from 1 to 7, where higher scores indicated greater competence. In this sample, internal consistency was good to excellent, with Cronbach's alpha coefficients of 0.86 for the total LGBT-DOCSS-JP score, 0.90 for Attitudinal Awareness, 0.81 for Basic Knowledge, 0.77 for Clinical Preparedness, and 0.93 for Clinical Training.

In addition, participants were asked to report the total number of hours of LGBT-related education they had received during (1) medical school and (2) residency training at their current training hospital.



**Fig. 1** Study participant flow. Note: Flow diagram showing the inclusion and exclusion process for postgraduate year 1 (PGY-1) residents who completed a nationwide standardized entrance examination in 2025 and the accompanying survey. Of 748 eligible examinees, 464 were excluded for declining participation or not responding to the survey, incomplete questionnaire data, or lack of consent for the use of responses. A total of 280 participants were analyzed (response rate: 37.4%)

The questionnaire also collected demographic and institutional data including age (years), sex (male or female), hospital type (community or university), hospital location (urban or non-urban), and graduated medical school location (urban or non-urban). Urban areas were defined as major cities (government-ordinance-designated cities and the special wards of Tokyo), and all other municipalities were categorized as non-urban. GM-ITE scores (range: 0–80) were also obtained. These scores were included as a covariate representing general clinical knowledge.

### Statistical analysis

We summarized data as counts, proportions, and means. Categorical variables were compared using chi-squared or Fisher's exact tests.

Univariable linear regression was first used to assess associations between the LGBT-DOCSS-JP total score and each independent variable: age, sex, hospital type, hospital location, graduated medical school location, and GM-ITE score. All variables were then entered simultaneously into a multivariable linear regression model to adjust for potential confounding. Categorical predictors were coded as indicator variables with the reference categories set as male (sex), community hospital (hospital type), non-urban (hospital location), and non-urban (graduated medical school location). The same analyses were repeated for each subscale.

Because the proportion of missing data was small, we conducted complete-case analyses for all regression models. We assessed multicollinearity using variance inflation factors and conducted residual diagnostics; no major violations of linear regression assumptions were identified.

Results are reported as regression coefficients ( $\beta$ ) with 95% confidence intervals (CIs) and p-values. Statistical significance was defined as  $p < 0.05$ . Analyses were

**Table 1** Demographic characteristics of participating PGY-1 residents ( $n = 280$ )

Characteristics	Value
Total participants, n	280
Age, mean (SD), years	25.7 (3.3)
Female, n (%)	91 (32.5)
Training hospital type	
Community hospitals, n (%)	196 (70.0)
University hospitals, n (%)	84 (30.0)
Training hospital location	
Urban, n (%)	102 (36.4)
Non-urban, n (%)	178 (63.6)
Medical school location	
Urban, n (%)	116 (41.3)
Non-urban, n (%)	164 (58.7)

Values are presented as counts and percentages unless otherwise indicated. Age is shown as mean (standard deviation)

conducted using Stata version 18 (StataCorp, College Station, TX, USA).

## Results

### Characteristics

Of the 748 residents who completed 'PGY-0' GM-ITE in 2025, 280 agreed to participate in the study and completed the survey (response rate: 37.4%; Fig. 1). Among participants, 32.5% were female, and the mean age was 25.7 years (Table 1). Training hospitals were predominantly community hospitals (70.0%), and 36.4% were located in urban areas; the proportion located in urban areas was 39.3% among community hospitals and 29.8% among university hospitals. In addition, 41.3% of participants had graduated from a medical school located in an urban area.

### LGBT-related educational exposure

Among participating residents, 47.9% reported not receiving LGBT-related education during medical school, and an additional 39.1% reported only 1–3 h. Only 14.0% received 4 or more hours. During residency, exposure was even more limited: 81.2% reported no LGBT-related education at their training hospital, 13.5% reported 1–3 h, and only 5.4% received more than 4 h.

### LGBT-DOCSS-JP scores

The mean (SD) total LGBT-DOCSS-JP score (1–7 scale) was 4.0 (0.6). Subscale scores were highest for Attitudinal Awareness (5.3 [0.9]), followed by Basic Knowledge (3.9 [1.2]), and lowest for Clinical Preparedness (2.5 [1.0]) and Clinical Training (2.3 [1.4]).

Item-level results are presented in Table 2. The lowest scores were reported for patient care experience with LGB (1.7 [1.3]) and transgender patients (1.8 [1.4]). Residents also reported receiving inadequate training to work with transgender (2.4 [1.5]) and LGB patients (2.3 [1.4]). In contrast, the highest scores were observed for attitudinal awareness items: most residents did not believe that being LGB and transgender is immoral (both 5.9 [1.5]) and did not feel morally uncomfortable providing care for LGBT patients (6.2 [1.4]).

### Factors associated with total LGBT-DOCSS-JP scores

Table 3 presents the results of the regression analyses. In univariable analyses, female sex was the only variable significantly associated with higher total LGBT-DOCSS-JP scores. In the multivariable model adjusting for all variables, this association remained ( $\beta = 0.30$ , 95% CI: 0.15 to 0.45,  $p < 0.001$ ), corresponding to female residents scoring on average 0.30 points higher than male residents on the 1–7 total scale. No other variables, including age, hospital type, hospital location, graduated medical school

**Table 2** Item-level scores of the LGBT-DOCSS-JP

Subscales	Item No.	Item Statement	Mean (SD)
Attitudinal awareness	3*	I think being transgender is a mental disorder.	5.6 (1.6)
	5*	A same sex relationship between two men or two women is not as strong and committed as one between a man and a woman.	5.4 (1.5)
	7*	LGB individuals must be discreet about their sexual orientation around children.	5.1 (1.6)
	9*	When it comes to transgender individuals, I believe they are morally deviant.	5.9 (1.5)
	12*	The lifestyle of a LGB individual is unnatural or immoral.	5.9 (1.5)
	17*	People who dress opposite to their biological sex have a perversion.	6.0 (1.4)
Basic knowledge	18*	I would be morally uncomfortable working with a LGBT client/patient.	6.2 (1.4)
	1	I am aware of institutional barriers that may inhibit transgender people from using health care services.	4.1 (1.5)
	2	I am aware of institutional barriers that may inhibit LGB people from using health services.	4.0 (1.5)
	6	I am aware of research indicating that LGB individuals experience disproportionate levels of health and mental health problems compared to heterosexual individuals.	3.8 (1.5)
Clinical preparedness	8	I am aware of research indicating that transgender individuals experience disproportionate levels of health and mental health problems compared to cisgender individuals.	3.8 (1.6)
	4*	I would feel unprepared talking with a LGBT client/patient about issues related to their sexual orientation or gender identity.	3.2 (1.4)
	13	I have experience working with LGB clients/patients.	1.7 (1.3)
	14	I feel competent to assess a person who is LGB in a therapeutic setting.	2.8 (1.4)
	15	I feel competent to assess a person who is transgender in a therapeutic setting.	2.8 (1.4)
Clinical teaching	16	I have experience working with transgender clients/patients.	1.8 (1.4)
	10	I have received adequate clinical training and supervision to work with transgender clients/patients.	2.4 (1.5)
	11	I have received adequate clinical training and supervision to work with LGB clients/patients.	2.3 (1.4)

The Japanese version of the Lesbian, Gay, Bisexual, and Transgender Development of Clinical Skills Scale (LGBT-DOCSS-JP) is an 18-item instrument that assesses healthcare providers' knowledge, attitudes, and skills regarding LGBT care. Items are rated on a 7-point Likert scale (1 = strongly disagree to 7 = strongly agree); eight items (3, 4, 5, 7, 9, 12, 17, 18) are reverse-scored and marked with an asterisk. The four subscales are *Attitudinal Awareness*, *Basic Knowledge*, *Clinical Preparedness*, and *Clinical Training*. Higher scores indicate greater competence

**Abbreviations:** LGB lesbian, gay, and bisexual, LGBT lesbian, gay, bisexual, and transgender

**Table 3** Associations between resident characteristics and LGBT-DOCSS-JP scores

Variable	Univariable $\beta$ (95% CI)	P-value	Multivariable $\beta$ (95% CI)	P-value
Binary variables				
Sex (female vs. male)	0.32 (0.18 to 0.47)	< 0.001	0.30 (0.15 to 0.45)	< 0.001
Hospital type (university vs. community hospital)	0.14 (-0.01 to 0.30)	0.06	0.09 (-0.06 to 0.25)	0.24
Hospital location (urban vs. non-urban)	0.13 (-0.02 to 0.27)	0.08	0.11 (-0.05 to 0.27)	0.17
Graduate medical school location (urban vs. non-urban)	0.01 (-0.13 to 0.15)	0.86	-0.01 (-0.17 to 0.14)	0.86
Continuous variables				
Age (per 1-year increase)	0.006 (-0.016 to 0.027)	0.59	0.006 (-0.018 to 0.028)	0.59
GM-ITE score (per 1-point increase)	0.003 (-0.007 to 0.014)	0.53	0.004 (-0.006 to 0.015)	0.53

Associations between resident characteristics and LGBT-DOCSS-JP total scores were examined using univariable and multivariable linear regression. Independent variables included sex (female vs. male), GM-ITE score (0–80), age (years), hospital type (university vs. community hospital), hospital location (urban vs. non-urban), and graduated medical school location (urban vs. non-urban). All variables were entered into the multivariable model to adjust for potential confounding. Categorical predictors were coded as indicator variables, with male (sex), community hospital (hospital type), and non-urban (hospital location and medical school location) as reference categories

**Abbreviations:** CI confidence interval, GM-ITE General Medicine In-Training Examination

location, and GM-ITE score were significantly associated with total scores.

#### Factors associated with each subscale of LGBT-DOCSS-JP

Details of the results are presented in Supplementary Tables 1–4. In multivariable models, Attitudinal Awareness scores were higher among female residents and lower in non-urban hospitals. For Basic Knowledge, urban hospital location was the only significant predictor. Higher Clinical Preparedness scores were associated with training in university and urban hospitals and with older age, whereas Clinical Training scores were higher only among residents in university hospitals; no other predictors showed significant associations with subscale scores.

#### Discussion

This study is, to our knowledge, the first nationwide investigation to assess LGBT-related clinical competence among PGY-1 residents in Japan using the Japanese version of the LGBT-DOCSS and provides a non-Western benchmark to complement prior research conducted primarily in Western settings. Several important findings emerged. First, the mean overall LGBT-DOCSS-JP score among residents was moderate, with attitudinal awareness rated relatively high but basic knowledge, clinical preparedness, and clinical training rated substantially lower. Second, female residents consistently scored higher than male residents in both univariable and multivariable models, suggesting gender-related differences in competence. Third, residents reported limited exposure to LGBT-related education during both medical school and residency.

Our findings are consistent with international evidence indicating that healthcare trainees often demonstrate supportive attitudes towards LGBT patients while lacking the knowledge and skills required for competent care. Systematic reviews of medical and health professional students have repeatedly documented this discrepancy, with attitudinal awareness and basic knowledge rated higher than clinical preparedness, particularly in relation to transgender care [19, 20]. In Japan, Kanakubo et al. [17] recently validated the Japanese version of the LGBT-DOCSS among healthcare professionals and reported mean scores that closely mirrored those observed in our PGY-1 cohort, thereby reinforcing the reliability and generalizability of the present findings within the Japanese context. By contrast, studies from the United States and a recent cross-national study in Europe found higher LGBT-DOCSS scores, particularly in terms of clinical preparedness, indicating that Japanese residents may lag behind their Western counterparts [21–23]. For example, Nowaskie et al. [21] conducted a large multicenter study of 1,701 U.S. health professional students and reported an overall mean LGBT-DOCSS score of 5.82 (Attitudinal

Awareness: 6.43; Basic Knowledge: 5.54; Clinical Preparedness: 5.12). In contrast, our PGY-1 cohort demonstrated markedly lower scores (Overall: 4.0; Attitudinal Awareness: 5.3; Basic Knowledge: 3.9; Clinical Preparedness: 2.5; Clinical Training: 2.3). Conversely, our results are broadly comparable to studies from countries such as India and Israel, where positive attitudes towards LGBT patients are evident but clinical preparedness remains limited [24, 25]. These cross-national differences likely reflect, at least in part, underlying societal attitudes: public acceptance of sexual and gender minorities remains lower in Japan than in many Western countries [26]. Within this sociocultural context, the relatively favorable attitudinal awareness scores observed in our cohort may represent a comparatively progressive stance among young physicians in Japan, even though their knowledge and preparedness scores were comparatively limited to Western samples. Collectively, these converging lines of evidence underscore that the gap between attitudes and clinical competence represents a global challenge in health professions education, while also highlighting the particularly pronounced deficits in LGBT-related training in Japan.

The observed sex differences are also notable. Female residents scored significantly higher on overall LGBT-DOCSS-JP and particularly on attitudinal awareness. Similarly, previous studies have demonstrated that female medical students and physicians tend to express more supportive attitudes and greater empathy towards sexual and gender minorities [27, 28]. Several mechanisms may explain this difference. Women are generally reported to score higher on empathy and perspective-taking, psychological traits that are protective against prejudice towards marginalized groups [29, 30]. Socialization processes may also play a role: women are more often encouraged to adopt communal and care-oriented roles, whereas men are more likely to endorse traditional masculine norms, social dominance orientation, and sexist beliefs, all of which are consistently associated with homophobia and transphobia [31]. Although the mechanisms underlying these sex differences remain unclear, the factors that may underlie such differences—including empathy, perspective-taking, or prior interpersonal experiences—represent modifiable targets for educational interventions. Beyond sex, our analyses indicated that institutional and demographic contexts also matter: residents in university and urban hospitals demonstrated higher clinical preparedness and training scores, and older age was modestly associated with greater preparedness. With respect to age, one possible explanation is that slightly older residents have accumulated more life and clinical experiences, including greater opportunities to interact with diverse patient populations, which may enhance their confidence and perceived preparedness in caring

for LGBT patients. Together, these findings suggest that LGBT-related competence is shaped by a complex interplay of psychological dispositions, socialization, contact experiences, and training environments. However, determining the relative contribution of these mechanisms was beyond the scope of this study and warrants further investigation.

A key finding of our study is the limited exposure to LGBT-related education reported by residents. Nearly half had received no formal education in medical school, and the vast majority had received no formal education during residency. A prior national survey reported a median of only 1 h of LGBT-related instruction at the undergraduate level in Japan [15], which may partly explain the limited self-reported educational exposure observed in our cohort. Even among those who had received training, exposure rarely exceeded a few hours. These patterns likely reflect structural features of Japanese medical education, in which LGBT-related content was only incorporated into the national model core curriculum in 2016 and is typically delivered as brief, stand-alone sessions rather than as a longitudinally integrated component of training [14]. This contrasts starkly with reports from North America, where median instructional time is substantially higher and some institutions incorporate more than 30 h of LGBT-specific content into the curriculum [6]. Systematic reviews further demonstrate that greater curricular exposure is associated with improved knowledge, preparedness, and confidence in caring for LGBT patients [19, 20]. The lack of structured education in Japan likely contributes to the deficiencies in knowledge and preparedness we observed. Moreover, our subscale analyses suggested that residents training at university hospitals or in urban areas scored higher in knowledge and preparedness, indicating disparities in educational resources across institutions. We included training hospital location and medical school location as contextual indicators of potential differences in educational resources, curricular implementation, and institutional inclusivity across settings. This finding aligns with prior studies showing that metropolitan and academic centers are more likely to implement LGBT-related curricula and institutional policies to promote inclusivity [32]. These results highlight the urgent need for the standardized, longitudinal integration of LGBT health content across medical schools and residency programs in Japan.

Our findings have several implications for medical education and health policies in Japan. First, LGBT health should be systematically integrated into undergraduate and postgraduate curricula, with explicit learning objectives and a minimum number of dedicated instructional hours. Educational approaches should not be limited to lectures but should incorporate interactive methods such as case-based discussions, role-play, standardized patient

encounters, e-learning modules, and patient narratives, which have been shown internationally to improve knowledge, attitudes, and clinical preparedness [33, 34]. Second, the assessment of LGBT-related clinical competence should be incorporated into program evaluation, using validated instruments such as the LGBT-DOCSS-JP and integrating LGBT-related content into existing residency assessments. By systematically addressing knowledge gaps and providing structured, multi-modal training opportunities, educational interventions may contribute to reducing health disparities faced by LGBT individuals in Japan and aligning domestic training with international best practices.

This study has several limitations. First, participants were limited to residents who took the GM-ITE, and the modest response rate (37.4%) raises the possibility of selection bias, potentially overestimating competence if residents with greater interest in LGBT issues were more likely to participate. Because the questionnaire was administered immediately after the GM-ITE, exam-related fatigue or stress may have reduced participation and affected response quality. In 2025, there were approximately 10,000 PGY-1 residents in Japan, so our sampling frame of 748 eligible residents at participating GM-ITE hospitals encompassed less than 10% of the national PGY-1 cohort. However, the demographic characteristics of our sample were broadly consistent with available national data on PGY-1 residents, including the proportion of female trainees and the distribution of training hospital types and locations, suggesting that major aspects of sample representativeness were preserved. Second, competence was assessed using a self-reported questionnaire, which may not fully reflect actual clinical behavior and may be subject to social desirability bias. In addition, although some associations, such as sex differences, were statistically significant, the practical significance of these effect sizes is unclear because established benchmarks for interpreting absolute score differences on the LGBT-DOCSS-JP are lacking. Because the LGBT-DOCSS-JP splits the original Clinical Preparedness domain into Clinical Preparedness and Clinical Training, total scores remain comparable with the original scale, but subscale comparisons should be interpreted cautiously. Third, educational exposure was based on residents' recall and may be subject to recall bias. Fourth, we were unable to account for individual background factors such as social or cultural influences, personal beliefs, or prior interpersonal experiences related to sexual and gender minorities, any of which could shape attitudes and contribute to unmeasured confounding. In particular, we did not assess religious or spiritual beliefs. Although many people in Japan do not identify with a specific religion, these factors may still influence attitudes toward sexual and gender minorities [35].

## Conclusions

In this nationwide study of PGY-1 residents in Japan, LGBT-related clinical competence was found to be moderate overall, with relatively high attitudinal awareness but limited knowledge, preparedness, and training. Female residents consistently scored higher than male residents, and disparities were observed by institutional context, with most residents reporting little or no formal LGBT-related education. Compared with reports from Western countries, the overall competence of Japanese residents—particularly in clinical preparedness—appears lower, which may reflect limited curricular integration of LGBT health as well as differences in clinical exposure and sociocultural context. However, these cross-national score comparisons should be interpreted cautiously given differences in sampling frames, training structures, health systems, and sociocultural contexts. Future research should use longitudinal cohort designs and intervention trials to evaluate the effectiveness of educational interventions throughout undergraduate and postgraduate training, track how competence develops across different career stages, and explore interdisciplinary approaches across healthcare professions. Strengthening LGBT clinical competence is essential for reducing health disparities and fostering a more inclusive healthcare environment in Japan.

## Supplementary Information

The online version contains supplementary material available at <https://doi.org/10.1186/s12909-025-08510-y>.

Supplementary Material 1.

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## Authors' contributions

Study concept and design : Nagasaki, Nishizaki Acquisition, analysis, or interpretation of data : Shimizu, Yamamoto, Shikino, Watari Manuscript drafting : Nagasaki Critical revision of the manuscript for important intellectual content : Nishizaki, Kobayashi, Shimizu, Yamamoto, Shikino, Watari Statistical analysis : Nagasaki Administrative, technical or material support : Nishizaki, Sekine, Kobayashi Supervision : Nishizaki, Kobayashi, Tokuda.

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## Data availability

Data sharing is not applicable to this article as the study did not involve the generation of publicly shareable datasets. All authors had full access to the study data. Dr. Nagasaki performed all the analyses.

## Declarations

### Ethics approval and consent to participate

The research consent form clearly indicated that participation was voluntary and that responses were anonymous. Informed consent was obtained from all participants prior to participation. The study was approved by the Ethical Review Committee of the Japan Institute for Advancement of Medical Education Program (JAMEP; Approval No. 24–25). The study was conducted in accordance with the principles of the Declaration of Helsinki.

### Consent for publication

Not applicable. The manuscript does not contain any individual person's data in any form (including individual details, images, or videos).

### Competing interests

Dr. Nishizaki received an honorarium from JAMEP as the GM-ITE project manager. Dr. Tokuda is the JAMEP director and received an honorarium from JAMEP as a speaker for the JAMEP lecture. Dr. Kobayashi and Dr. Shikino received an honorarium from JAMEP as speakers for the JAMEP lecture. Dr. Shimizu, Dr. Yamamoto, and Dr. Shikino received an honorarium from JAMEP as exam preparers for GM-ITE.

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## References

- King M, Semlyen J, Tai SS, et al. A systematic review of mental disorder, suicide, and deliberate self harm in lesbian, gay and bisexual people. *BMC Psychiatry*. 2008;8(1):70. <https://doi.org/10.1186/1471-244x-8-70>.
- Plöderl M, Tremblay P. Mental health of sexual minorities. A systematic review. *Int Rev Psychiatry*. 2015;27(5):367–85. <https://doi.org/10.3109/09540261.2015.1083949>.
- Durso LE, Meyer IH. Patterns and predictors of disclosure of sexual orientation to healthcare providers among lesbians, gay men, and bisexuals. *Sex Res Soc Polic*. 2013;10(1):35–42. <https://doi.org/10.1007/s13178-012-0105-2>.
- Burke SE, Dovidio JF, Przedworski JM, et al. Do contact and empathy mitigate bias against gay and lesbian people among heterosexual first-year medical students? A report from the medical student CHANGE study. *Acad Med*. 2015;90(5):645–51. <https://doi.org/10.1097/acm.0000000000000661>.
- Elliott MN, Kanouse DE, Burkhart Q, et al. Sexual minorities in England have poorer health and worse health care experiences: a National survey. *J Gen Intern Med*. 2015;30(1):9–16. <https://doi.org/10.1007/s11606-014-2905-y>.
- Obedin-Maliver J, Goldsmith ES, Stewart L, et al. Lesbian, gay, bisexual, and transgender-related content in undergraduate medical education. *JAMA*. 2011;306(9):971–7. <https://doi.org/10.1001/jama.2011.1255>.
- Yu H, Flores DD, Bonett S, et al. LGBTQ+ cultural competency training for health professionals: a systematic review. *BMC Med Educ*. 2023;23(1):558. <https://doi.org/10.1186/s12909-023-04373-3>.
- Macedo A, Aurindo M, Febra C. Effectiveness of undergraduate medical students training on LGBTQIA+ people health: a systematic review and meta-analysis. *BMC Med Educ*. 2024;24(1):63. <https://doi.org/10.1186/s12909-024-05041-w>.

9. Diversity of Work and Life, and Coexistence Research Team. Preliminary results from the National Institute of Population and Social Security Research. Survey on Diversity of Work and Life, and Coexistence among the Residents of Osaka City. Tokyo, Japan: 2019. Available from: <https://www.ipss.go.jp/projects/j/SOGI/%E7%B5%90%E6%9E%9C%E9%80%9F%E5%A0%B120190425%E5%85%AC%E8%A1%A8%E7%69%4A8ENG.pdf>. Accessed 13 Dec 2025.
10. Rahman Q, Xu Y, Lippa RA, et al. Prevalence of sexual orientation across 28 nations and its association with gender Equality, economic Development, and individualism. *Arch Sex Behav*. 2020;49(2):595–606. <https://doi.org/10.1007/s10508-019-01590-0>.
11. Mizumoto J, Kono E, Yoshida E. Healthcare professionals' experiences related LGBTQ+ patients and colleagues at their workplace: descriptive research in Japan. *J Gen Fam Med*. 2025;26(4):312–25. <https://doi.org/10.1002/jgf2.70012>.
12. Imamitsu H. Survey of 8609 physicians, What do you think about LGBT? although awareness of LGBT is over 90%, there is some confusion about how to treat them. 2022. Available at <https://medical.nikkeibp.co.jp/leaf/member/series/1000research/202204/574571.html>. Accessed 13 Dec 2025.
13. Nishigori H. Medical education in Japan. *Med Teach*. 2024;46(sup1):S4–10. <https://doi.org/10.1080/0142159x.2024.2372108>.
14. Ministry of Education, Culture, Sports, Science and Technology (MEXT). Model Core Curriculum for Medical Education in Japan: AY 2016 Revision. Tokyo: MEXT. 2017. Available from: [https://www.mext.go.jp/content/20230323-mxt\\_igaku-000028108\\_00005.pdf](https://www.mext.go.jp/content/20230323-mxt_igaku-000028108_00005.pdf). Accessed 13 Dec 2025.
15. Yoshida E, Matsushima M, Okazaki F. Cross-sectional survey of education on LGBT content in medical schools in Japan. *BMJ Open*. 2022;12(5):e057573. <https://doi.org/10.1136/bmjopen-2021-057573>.
16. Bidell MP. The Lesbian, Gay, Bisexual, and transgender development of clinical skills scale (LGBT-DOCSS): Establishing a new interdisciplinary self-assessment for health providers. *J Homosex*. 2017;64(10):1432–60. <https://doi.org/10.1080/00918369.2017.1321389>.
17. Kanakubo Y, Sugiyama Y, Yoshida E, et al. Development and validation of the Japanese version of the Lesbian, Gay, Bisexual, and transgender development of clinical skills scale. *PLoS ONE*. 2024;19(3):e0298574. <https://doi.org/10.1371/journal.pone.0298574>.
18. von Elm E, Altman DG, Egger M, et al. The strengthening the reporting of observational studies in epidemiology (STROBE) statement: guidelines for reporting observational studies. *J Clin Epidemiol*. 2008;61(4):344–9. <https://doi.org/10.1016/j.jclinepi.2007.11.008>.
19. Wiwattarangkul T, Wainipitapong S, Rojanathagoon T, et al. Attitudes of medical students towards LGBTQ+ individuals: a systematic review. *Crit Public Heal*. 2025;35(1):2474689. <https://doi.org/10.1080/09581596.2025.2474689>.
20. Cruciani G, Quintigliano M, Mezzalana S, et al. Attitudes and knowledge of mental health practitioners towards LGBTQ+ patients: a mixed-method systematic review. *Clin Psychol Rev*. 2024;113:102488. <https://doi.org/10.1016/j.cpr.2024.102488>.
21. Nowaskie DZ, Patel AU, Fang RC. A multicenter, multidisciplinary evaluation of 1701 healthcare professional students' LGBT cultural competency: comparisons between dental, medical, occupational therapy, pharmacy, physical therapy, physician assistant, and social work students. *PLoS ONE*. 2020;15(8):e0237670. <https://doi.org/10.1371/journal.pone.0237670>.
22. Nowaskie DZ, Najam S. Lesbian, gay, bisexual, and/or transgender (LGBT) cultural competency across the intersectionalities of gender identity, sexual orientation, and race among healthcare professionals. *PLoS ONE*. 2022;17(11):e0277682. <https://doi.org/10.1371/journal.pone.0277682>.
23. Karniej P, Dissen A, Pietrzykowski Ł, et al. Lesbian, gay, bisexual, and transgender clinical competence of health professionals in Poland and Spain: results of the health exclusion research in Europe (HERE) study. *BMC Med Educ*. 2025;25(1):144. <https://doi.org/10.1186/s12909-025-06744-4>.
24. Vishal B. Perceptions and preparedness: a study on Lgbt patient care among medical and allied healthcare students and practitioners in India using LGBT-DOCSS. *Am J Psychiatr Rehabil*. 2024;27(2):10–21. <https://doi.org/10.69980/ajpr.v27i2.15>.
25. Elboim-Gabyzon M, Klein R. Lesbian, gay, bisexual, and transgender clinical competence of physiotherapy students in Israel. *BMC Med Educ*. 2024;24(1):729. <https://doi.org/10.1186/s12909-024-05679-6>.
26. Takashino N, Davidson RJ, Keeni M. Traditional family system, local government recognition and citizens' perceptions of homosexuality in Japan: an exploratory study. *Equal Divers Incl*. 2024;43:693–710. <https://doi.org/10.1108/EDI-05-2023-0151>.
27. Sanchez NF, Rabatin J, Sanchez JP, et al. Medical students' ability to care for lesbian, gay, bisexual, and transgendered patients. *Fam Med*. 2006;38(1):21–7.
28. Shindel AW, Ando KA, Nelson CJ, et al. Medical student sexuality: how sexual experience and sexuality training impact U.S. and Canadian medical students' comfort in dealing with patients' sexuality in clinical practice. *Acad Med*. 2010;85(8):1321–30. <https://doi.org/10.1097/acm.0b013e3181e6c4a0>.
29. Johnson ME, Brems C, Alford-Keating P. Personality correlates of homophobia. *J Homosex*. 1997;34(1):57–69. [https://doi.org/10.1300/J082v34n01\\_05](https://doi.org/10.1300/J082v34n01_05).
30. Otsuka T, Sakaguchi K, Houchens N, et al. Empathy among physicians and nurses in Japan: a nationwide cross-sectional study. *J Gen Intern Med*. 2024;39(6):960–8. <https://doi.org/10.1007/s11606-024-08620-1>.
31. Whitley BE. Gender-role variables and attitudes toward homosexuality. *Sex Roles*. 2001;45(11–12):691–721. <https://doi.org/10.1023/a:1015640318045>.
32. DiLeo R, Borkowski N, O'Connor SJ, et al. The relationship between leader in LGBT healthcare equality designation and hospitals' patient experience scores. *J Healthc Manag*. 2020;65(5):366–77. <https://doi.org/10.1097/jhm-d-19-00177>.
33. Ufomata E, Eckstrand KL, Spagnoletti C, et al. Comprehensive curriculum for internal medicine residents on primary care of patients identifying as lesbian, gay, bisexual, or transgender. *MedEdPORTAL*. 2020;16:10875. [https://doi.org/10.15766/mep\\_2374-8265.10875](https://doi.org/10.15766/mep_2374-8265.10875).
34. Forer R, Harleen A, Neff K, et al. Evaluating effectiveness of an online LGBTQIA+ health course for medical students. *Fam Med*. 2024;56(5):308–12. <https://doi.org/10.22454/fammed.2024.956897>.
35. Westwood S. Religious-based negative attitudes towards LGBTQ people among healthcare, social care and social work students and professionals: A review of the international literature. *Health Soc Care Community*. 2022;30(5):e1449–1470. <https://doi.org/10.1111/hsc.13812>.

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