BMJ Open

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Journal:	*BMJ Open*
Manuscript ID	bmjopen-2021-057573
Article Type:	Original research
Date Submitted by the Author:	23-Sep-2021
Complete List of Authors:	Yoshida, Eriko; Jikei University School of Medicine, Division of Clinical Epidemiology, ; Kawasaki Kyodo Hospital, Department of General Internal Medicine Matsushima, Masato; Jikei University School of Medicine, Division of Clinical Epidemiology Okazaki, Fumiko; Jikei University School of Medicine, Center for Medical Education
Keywords:	MEDICAL EDUCATION & TRAINING, EPIDEMIOLOGY, SEXUAL MEDICINE

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TITLE PAGE

Title

Cross-sectional survey of education on LGBT content in medical schools in Japan

Authors

Eriko Yoshida, MD,[1,2] Masato Matsushima, MD, PhD, MPH,[1] and Fumiko Okazaki, MD, PhD[3]

Author affiliations

[1] Division of Clinical Epidemiology, Research Center for Medical Sciences, The Jikei University School of Medicine, Tokyo, Japan

[2] Department of General Internal Medicine, Kawasaki-Kyodo Hospital, Kawasaki Health Cooperative Association, Kawasaki, Japan

[3] Center for Medical Education, The Jikei University School of Medicine, Tokyo, Japan

Corresponding author

Eriko Yoshida, MD

Division of Clinical Epidemiology, Research Center for Medical Sciences, The Jikei University School of Medicine, Tokyo, Japan. Department of General Internal Medicine

Address: Division of Clinical Epidemiology, The Jikei University School of Medicine

3-25-8 Nishishimbashi, Minato-ku, Tokyo, Japan

Zip code 105-8461

Telephone and fax number: 81-3-3433-1111(2399)

Email address: yoshidayoyo@jikei.ac.jp

Word Count: 3318 words

Cross-sectional survey of education on LGBT content in medical schools in Japan

Abstract

Objectives: We aimed to clarify current teaching on LGBT content in Japanese medical schools and compare it with data from the United States and Canada reported in 2011 and Australia and New Zealand reported in 2017.

Design: Cross-sectional study.

Setting： Eighty-two medical schools in Japan.

Participants: The Deans and/or relevant faculty members of the medical schools in Japan.

Primary outcome measure： Hours dedicated to teaching LGBT content in each medical school.

Results: In total, 60 schools (73.2%) returned a questionnaire. One was excluded because of missing values, leaving 59 responses (72.0%) for analysis. In total, LGBT content was included in preclinical training in 31 of 59 schools and in clinical training in eight of 53 schools. The median time dedicated to LGBT content was one hour (25th–75th percentile 0–2 hours) during preclinical training and zero hours during clinical training (25th–75th percentile 0–0 hour). Only 13 schools (22%) taught students to ask about same-sex relations when obtaining a sexual history. Biomedical topics were more likely to be taught than social topics. In total, 45 of 57 schools (79%) evaluated their coverage of LGBT content as poor or very poor, and 23 schools (39%) had some students who had come out as LGBT. Schools with faculty members interested in education on LGBT content were more likely to cover it.

Conclusion: Education on LGBT content in Japanese medical schools is less established than in the US and Canada.

Strengths and limitations of this study

- This is the first study to describe the quantity and quality of education on LGBT content through a survey of all medical schools in Japan and to compare them with US/Canada and Australia/New Zealand.

- The questionnaire included items to investigate whether the presence of medical students/ faculty who are coming out or faculty interested in LGBT education were associated with covering LGBT content.

- Since the questionnaire was sent to the dean of the medical school, it is undeniable that it may not have been given to someone who has an overall understanding of LGBT education in medical schools.

Keywords: LGBT, medical education, undergraduate, Japan, international comparison

Introduction

Lesbian, gay, bisexual, transgender (LGBT) people are exposed to health inequalities. These health disparities are partly attributable to social discrimination. In Japan, 58% of LGBT people in have been bullied in school,[1] and 61.4% of transgender people have reported difficulties finding a job because of their gender identity.[2] As for health disparities, for example, gay and bisexual men have higher rate of attempted suicide than heterosexual men[3] and transgender people have high rates of suicidal ideation.[4] Lesbian and bisexual women have high rates of self-harm.[5]

Furthermore, In Japan, it has been reported that there are barriers for LGBT people to access medical care, and that they are sometimes treated inappropriately in medical settings. More than 40% of transgender people reported that they had unpleasant experiences during medical visits or hesitated to seek medical care.[6] A survey of hospital nurse managers reported that more than 30% of hospitals allowed visitation and end-of-life care only to relatives, and partners of the opposite sex, but not to partners of the same sex.[7]

To eliminate these health disparities, healthcare providers should be equipped with better knowledge, skills and attitudes. A systematic review reported that medical staff and students' knowledge and attitude towards LGBT patients was improved by education.[8] Education may therefore be an important tool in improving medical care for LGBT patients. However, as shown in this review, most of the reports on medical education about LGBT content are mainly from the U.S., with limited reports from Asia. Understanding the cultural background is important in developing medical education about LGBT content in East Asian countries, which have different cultural backgrounds from the West.

In Japan, it has been suggested that there are few people who come out, making LGBT people less visible. For example, in a survey of 16 countries conducted by Ipsos, 46% of respondents answered that they had an LGBT person close to them, compared with only 5% of respondents in Japan, the second lowest of the 16 countries.[9] Tamagawa also commented that "a number of Japanese GLBT scholars and activists attest that it is extremely difficult, if not impossible, to come out of the closet in Japanese society"(p488).[10] In Japan, where LGBT people are thus less visible, the revision of the model core curriculum for medical education for the 2016 academic year (2017) was the first version to include a learning goal about being able to "explain gender formation, sexual orientation, and ways of consideration for gender identification"(p43).[11] However, there are still no guidelines about what and how to teach LGBT-related content in medical education in Japan. Epidemiological studies are necessary to look at the current situation in detail and compare it with countries where education is already advanced. However, there is

only one report in English describing the status of training on LGBT content in medical schools in Japan.[12] It had a low response rate and did not ask for details about the content of the education without direct comparison by survey data to other countries. Our study is the first attempt of which we are aware to survey the quantity and quality of education on LGBT content in Japanese medical schools and compare result with the data from other countries. We used a questionnaire developed for a previous study in the US and Canada[13] and subsequently used in a study in Australia and New Zealand[14] and compared results with data from those previous studies.

Methods

Participants and study setting

Questionnaires were mailed to the 82 Deans of the medical schools in Japan between July 2018 and January 2019. The aim and importance of our study were announced in the journal *Medical Education Japan* in April 2018.[15] We asked each Dean to complete the questionnaire, involving the director of education and/or relevant faculty members when necessary.

Questionnaire design

The questionnaire consisted of 18 questions, including 13 drawn from Obedin-Maliver et al.[13] and translated into Japanese with permission from the author and American Medical Association through the Copyright Clearance Center (Copyright © 2011 American Medical Association. All rights reserved).

Five new questions were also included: 1) the type of school (public or private/others), 2) whether any medical students had come out as LGBT, 3) whether any faculty members had come out as LGBT, 4) whether any faculty members were interested in education on LGBT content and 5) who completed the questionnaire.

The primary outcome was hours dedicated to teaching LGBT content in each medical school.

Data collection process

Data were collected between July 2018 and January 2019. If there was no response by the due date, we mailed the questionnaire twice more and contacted the school by telephone.

If schools did not wish to participate, we asked them to return the blank questionnaire. To confirm which universities had responded, the university name was included on the response envelope. The divisional clerk, who was not involved in the research, opened the envelopes and kept the answer sheets separately. The name of the university therefore could not be linked to the answers, and the completed questionnaires were treated as anonymous. The questionnaires included details of these processes. The questionnaire included information about the purpose of the study and how the answers would be used. Questionnaire completion was considered to show consent to participate in the study.

Data analysis

Each question was analyzed excluding missing values. We compared the proportions of medical schools that taught each LGBT topic between Japan and the US and Canada using Fisher's test. This was also used to identify the statistical significance of the relationships between factors and teaching on LGBT content in Japan. Testing excluded any answers indicating "declined to answer". All statistical analyses used Stata ver16.0.

Results

In total, 60 of the 82 schools (73.2%) responded, and 42 answered all questions. Four schools provided double answers to one question. We removed one respondent that did not answer 11 of 18 questions, leaving responses from 59 schools (72.0% of Japanese medical schools) for analysis. The remaining respondents had no more than six missing answers and were included in the analysis (Figure 1). Two researchers checked the double answers and agreed how to combine them.

Only 15 of the 59 Deans completed the questionnaire themselves. In 36 schools, the respondents were the directors of education, 11 were completed by obstetrician-gynecologists, eight by psychiatrists, eight by urologists and 24 by others (for example, other specialties or office workers). Of the 59 schools, 28 were public, 27 were private or others and four schools did not answer this question.

Education on LGBT content

In total, 31 of the 59 schools (52.5% of respondents) included LGBT content in preclinical training, 18 (30.5%) did not and 10 (16.9%) did not know how many hours were spent. For the 49 schools that provided this information for preclinical training, the median (25th–75th percentile) and mean (± standard deviation [SD]) hours were one hour (0–2 hours) and 1.6 (± 2.4) hours (Figure 2).

Only eight schools of 53 (15.1% of respondents) included LGBT content during clinical training, 25 schools (47.2%) did not cover it and 20 (37.7%) did not know. The median (25th–75th percentile) and mean (± SD) hours of the 33 schools were zero (0–0) hour and 0.3 (± 0.6) hours (Figure 2).

In total, 33 schools (55.9% of respondents) provided information about hours spent on teaching LGBT content across the whole curriculum. The median (25th–75th percentile) and mean (± SD) were zero (0–2) hours and 1.4 (± 2.4) hours. Six schools provided no information about clinical training time, resulting in fewer schools for analysis of total time. The median and mean total time were therefore shorter than the preclinical time. There was no statistically significant relationship between type of school (public or private/other) and teaching about LGBT content (Fisher's exact test, preclinical $p = 0.38$, clinical $p = 0.65$, total $p = 0.24$).

In total, 51 schools provided information about whether their curricula covered 16 LGBT-related topics. Of these, 15 (29.4%) covered at least half the topics. For each topic, the number of schools that responded that it was taught in the required or elective curriculum and that it did not need to be taught are summarized in Table 1.

In total, 37 respondents of 57 (64.9%) did not evaluate students' knowledge about LGBT content. The most frequent form of evaluation was a written examination (16 of 57, 28.1%). No schools used faculty-observed patient interactions or evaluation by patients, and only one used peer-to-peer evaluations and evaluation by standardized patients. The free-text responses included answers such as reaction papers, reports, presentations and oral examinations.

The strategies that could be used to increase training on LGBT content are shown in Table 2. The most common was "Faculty willing and able to teach LGBT-related curricular content".

Table 1. Proportion of schools teaching particular LGBT topics in the required or elective curriculum and answering 'coverage not needed' about each topic

	Available in required or elective curriculum (N = 51)	Coverage not needed (N = 53)
Disorders of Sex Development (DSD)/Intersex	23 (45%)	2 (4%)
HIV in LGBT people	20 (39%)	2 (4%)
Gender identity	19 (37%)	3 (6%)
Sexual orientation	17 (33%)	6 (11%)
Coming out	16 (31%)	6 (11%)
Transitioning	16 (31%)	3 (6%)
Sex reassignment surgery (SRS)	16 (31%)	2 (4%)
Sexually transmitted infections (not HIV) in LGBT people	15 (29%)	2 (4%)
Barriers to accessing medical care for LGBT people	14 (27%)	5 (9%)
Mental health in LGBT people	14 (27%)	5 (9%)
LGBT adolescent health	7 (14%)	5 (9%)
Body image in LGBT people	7 (14%)	6 (11%)
Alcohol, tobacco, or other drug use among LGBT people	5 (10%)	7 (13%)
Chronic disease risk for LGBT populations	5 (10%)	4 (8%)
Safer sex for LGBT people	4 (8%)	6 (11%)
Unhealthy relationships among LGBT people	0 (0%)	5 (9%)

These items were taken from questions 8 and 9 from the questionnaire by Obedin-Maliver et al.[13]

Table 2. Possible strategies to increase LGBT-specific content* (N = 50)

	No. of respondents (%)
Faculty willing and able to teach LGBT-related curricular content	29 (58.0)
Curricular material coverage required by accreditation bodies	24 (48.0)
Questions based on LGBT health/health disparities on national examinations	20 (40.0)
More time in the curriculum to be able to teach LGBT-related content	20 (40.0)
Curricular material focusing on LGBT-related health/health disparities	16 (32.0)
Increased financial resources	10 (20.0)
More evidence-based research regarding LGBT health/health disparities	8 (16.0)
Logistical support for teaching LGBT-related curricular content	6 (12.0)
Methods to evaluate LGBT curricular content	6 (12.0)
Don't know	9 (18.0)
Other	3 (6.0)

* To focus on what would help in future, we specifically asked about future strategies rather than current success strategies. These items were taken from question 13 from the questionnaire by Obedin-Maliver et al.[13]

Original questions

The results of our new questions are shown in Table 3. There were no relationships between whether any students or faculty members had come out and teaching about LGBT content (Fisher's exact test, $p = 0.31$, $p = 0.29$). The schools that clearly indicated that they had faculty members interested in education on LGBT content were more likely to cover it (Fisher's exact test, $p < 0.01$).

Table 3. Responses to our original question (N = 59)

Were/are there	Yes	No	Don't know	Declined to answer
Any students who had come out as LGBT?	23 (39.0%)	10 (17.0%)	20 (33.9%)	6 (10.2%)
Any faculty members who had come out as LGBT?	7 (11.9%)	11 (18.6%)	37 (62.7%)	4 (6.8%)
Faculty members interested in education on LGBT content?	27 (45.8%)	1 (1.7%)	30 (50.9%)	1 (1.7%)

Comparison between Japan, the US/Canada and Australia/New Zealand

Only nine of 132 schools (6.8%) in the US and Canada did not include LGBT content in preclinical training. The proportion of schools not teaching it in Japan (18 of 59 schools, 30.5%) was therefore much higher (Fisher's exact test, $p < 0.01$) (Figure 3). Even if all the schools that responded 'not known' had provided education on LGBT content during preclinical training in Japan, the proportion of schools not teaching about LGBT content would still be significantly higher in Japan than the US and Canada (Fisher's exact test, $p < 0.01$). In the US and Canada, 44 of 132 schools (33.3%) did not include LGBT content during clinical training, which was significantly less than in Japan (25 of 53 schools, 47.2%) (Fisher's exact test, $p < 0.01$) (Figure 3). There were also significant differences in both pre-clinical and clinical training when schools that answered "don't know" were excluded (Fisher's exact test, $p < 0.01$).

In the US and Canada, the median time (25th–75th percentile) spent on LGBT content during preclinical and clinical training was 4 (2–6) and 2 (0–3) hours, longer than the 1 (0–2) and zero (0–0) hours in Japan.

We were unable to compare our data with Australia and New Zealand, because there was no information about how many schools there did not teach about LGBT content and the median hours were not shown.[14]

The detailed comparison between Japan, the US/Canada and Australia/New Zealand is shown in Table 4. There were too few data from Australia and New Zealand for detailed statistical comparisons.

Table 4. Comparison of education on LGBT content between Japan, the US and Canada, and Australia and New Zealand

		Japan		U.S. and Canada		Australia and New Zealand	
No. of responders/total no. of schools (proportion)		59/82 (72%)		132/176 (75%)		15/21 (71%)	
Methods of teaching LGBT content				number (proportion)			
LGBT-specific content in the required preclinical curriculum[†]	interspersed	19	(32.8%)	88	(66.7%) *	9	(60.0%)
	discrete modules	11	(19.0%)	32	(24.2%)	5	(33.3%)
Lectures or small-group sessions in the required clinical curriculum[‡]		12	(20.3%)	79	(59.8%) *	2/1[‖]	(13.3%/6.6%)
Clinical clerkship site that is specifically designed to facilitate LGBT patient care[§]	required clerkship	0	(0.0%)	7	(5.3%)	5[¶¶]	(33.3%)
	elective clerkship	0	(0.0%)	12	(9.1%) **	7[¶¶]	(46.6%)
Faculty development for teaching about LGBT health[ǀ]		5	(8.5%)	27	(20.5%)	0	(0.0%)
Coverage of LGBT content				number (proportion)			
Asking about same-sex relations when obtaining sexual history[¶]		13	(22.0%)	128	(97.0%) *	12	(80.0%)
Teaching difference between behavior and identity[††]		17	(28.8%)	95	(72.0%) *	10	(66.7%)
At least half of 16 LGBT-related topics covered in elective or required curriculum[‡‡]		15	(29.4%)	99	(75.0%) *	-	-
Evaluation of coverage of LGBT content (very poor/poor)[§§]		45	(79.0%)	34	(25.8%) *	3	(20.0%)

* P value < 0.01, ** P value < 0.05 for comparison of the proportions of schools that answered yes between Japan and U.S./Canada

Number answering "Do not know"/ missing value among Japanese responses: [†]3/1, [‡]11/0, [§]0/0, [ǀ]4/0, [¶]17/0, [††]10/0, [‡‡]10/8 [§§]3/2

[‖]Two schools had lectures and one had small-group sessions. Sanchez AA et al asked separately about lectures and small-group sessions. [14]

[¶¶]Two schools had clinical rotation site as a required clinical rotation, four as an elective and three as both. [14]

Items on methods of teaching LGBT content and coverage of LGBT content were cited from or corresponding to questions 2–5, and 6, 7, 8, and 10 of the questionnaire by Obedin-Maliver et al.[13]

Discussion

This survey was the first attempt to compare education about LGBT content in medical schools in Japan with other countries. A much higher proportion of schools did not teach about LGBT content in Japan than in the US and Canada. The coverage of LGBT topics was also much lower in Japan than in the US/Canada and Australia/New Zealand. Faculty members interested in teaching LGBT content could be important in increasing its coverage in medical education.

In total, 31 of 59 schools said they taught about LGBT content. In contrast, a previous study by Yamazaki et al. reported that only 22 of 37 schools provided lectures or workshops on sexual and gender minorities in Japan.[12] This is because the methodology in selecting target schools was different from ours, which resulted in the longer lecture time (median 130 minutes) than ours. Both our study and that of Yamazaki et al. suggested that the time spent teaching about LGBT content is significantly lower in Japan than in the US and Canada. Our study also showed that a much higher proportion of schools in Japan do not include LGBT content during either preclinical or clinical training than in the US and Canada.[13] Nine years have passed since the survey in the US and Canada, but the curricula in Japan are still less established.

The quality of education on LGBT content was also lower in Japan than in the US/Canada and Australia/New Zealand. Some topics were not considered to be necessary by some Japanese respondents. Biomedical topics such as HIV and disorders of sex development were more likely to be taught than social topics such as unhealthy relationships, safer sex and substance abuse. We believe that the lack of educational guidelines on LGBT content means that there has been little discussion about what should be taught, resulting in lack of acknowledgement of the importance of social problems among LGBT people. In contrast, in the US, the guideline for medical education from the Association of American Medical Colleges summarized the health disparities of LGBT people, including social issues, and provided professional competency objectives to improve health care for LGBT people.[16]

Additional questions in our survey were designed to explore the factors that promote LGBT education. A study in the U.S. and Canada found that East Asian medical students were less likely to come out about their sexual identity than white students,[17] so we assumed that sexuality would also tend to be hidden in medical schools in Japan as well. We hypothesized that openly LGBT students or staff might stimulate interest. Of respondent schools, 39% had students who had come out as LGBT, which was more than we expected. However, we found no relationship between teaching time and whether there were LGBT staff or students who came out. It is

possible that staff or students coming out may be considered a single case, not a common issue, and therefore not result in changes in educational policy in the school.

The reasons why LGBT-related education in Japan is so much worse in both quantity and quality may be both socio-cultural and medical-educational. Socio-culturally, there are no anti-discrimination laws regarding sexual orientation or gender identity, and same-sex marriages have not been approved in Japan. Cultures and social systems that protect the rights of LGBT people may therefore be less mature in Japan. This could make it difficult for LGBT people to come out. In medical settings, 58% of LGBT people who accessed medical services for mental health issues did not disclose their sexual orientation or gender identity to staff.[18] It may therefore be hard for healthcare professionals to identify LGBT patients as such. Yamazaki et al reported that the most common reason for not teaching LGBT content in Japanese medical schools was unavailability of suitable instructors.[12] In our study, the most popular future strategy for increasing the time on LGBT content was "Faculty willing and able to teach LGBT-related curricular content". We found that schools with faculty members interested in education on LGBT content were more likely to cover this topic. We therefore believe it is essential to provide more opportunities for faculty members to acquire the skills to teach about LGBT issues.

The inadequacy of medical education probably reflects the current state of medical practice in Japan. To reduce health disparities among LGBT people, it is necessary to examine whether LGBT people are being properly cared for in medical settings in countries where LGBT is invisible, such as Japan, as well as improving medical education.

Limitations

This study had some limitations. First, a high response rate was considered essential to enable comparisons with previous studies, so we actively followed up questionnaires, which increased the response rate from 47.6% after the first mail. However, the final response rate was just 73.2% (60 of 82 schools) which was lower than the 85.2% (150 of 176 schools) in the US and Canada.[13] The results should therefore be interpreted with caution.

Second, we calculated the proportion of schools for each question excluding missing values. The studies in the US and Canada[13] and in Australia and New Zealand[14] both used list-wise case deletion. Using this method, the proportion of schools including LGBT content in preclinical and clinical training decreased from 52.5% (31 of 59 schools) and 15.1% (eight of 53 schools) to 35.7% (15 of 42 schools) and 11.9% (five of 42), an even bigger difference with the US and Canada. The median (25th–75th percentile) and mean (± SD) time were one (0–1.2) hour and 1.4

(± 2.5) hours during preclinical training, and zero (0–0) hours and 0.25 (± 0.6) hours during clinical training, which were very similar to our previous figures.

Third, there were some double answers for one question. This may be because the questionnaire had been given to individual departments rather than a key faculty member aware of the overall education curriculum. It is therefore not clear whether the responses accurately reflected the current situation. However, this confusion probably reflects a lack of coordinated training on LGBT content.

Conclusions

The median time given to LGBT content during preclinical training was one hour, and 30.5% of respondents did not include any time. During clinical training, the median time was zero hours, only 15.1% of respondents included dedicated time and 47.2% did not cover it at all. The coverage of LGBT topics in medical education was much lower in Japan than in the US/Canada and Australia/New Zealand. To promote education about LGBT content, it is necessary to train faculty members to be able to teach these topics.

Acknowledgements

The authors would like to thank Professor Osamu Fukushima for his help in distributing our questionnaire. We also thank Ms. Chikako Mori, the clerk in our division, for her support, and Melissa Leffler, MBA, from Edanz (https://jp.edanz.com/ac) for editing a draft of this manuscript.

Figure Legends

Figure 1. The flowchart of respondent selection

Figure 2. Hours dedicated to teaching LGBT content in Japanese medical schools

Footnote: *The numbers after the decimal point were rounded up.

Figure 3. Proportion of schools that did not teach about LGBT content at all

Footnotes

Author Contributors

EY designed the study, was primarily responsible for data collection, data analysis, interpretation and drafted the manuscript. MM designed the study, contributed to the interpretation of data, and reviewed the manuscript. FO interpreted the results and reviewed the manuscript. All co-authors reviewed and approved the article prior to submission.

Funding

This study was supported by the Jikei University Research Fund for Graduate Students (grant number: N/A).

Disclaimer

The sponsor of this study had no role in the study design; the study conduct including collection, analysis, or interpretation of the data; the manuscript preparation; or the decision to submit the manuscript for publication.

Competing interests

MM received lecture fees and lecture travel fees from the Centre for Family Medicine Development of the Japanese Health and Welfare Co-operative Federation. MM is an adviser of the Centre for Family Medicine Development practice-based research network, and a Program Director of the Jikei Clinical Research Program for Primary Care. MM's son-in-law works at IQVIA Services Japan K.K., which is a contract research organization and a contract sales organization. EY is a former trainee of the Jikei Clinical Research Program for Primary Care.

Ethics approval

Patient consent for publication

Not required.

Ethics approval

The study was approved by the ethics committee of the Jikei University School of Medicine for Biomedical Research (ref no. 30-042(9063)).

Data sharing statement

No additional data are available.

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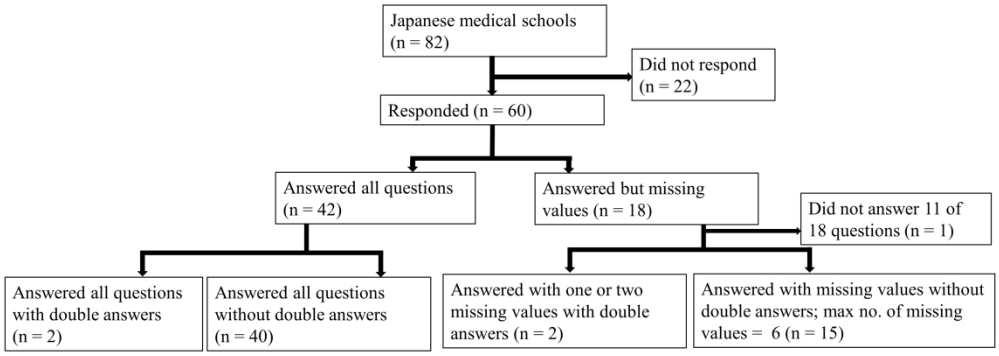

Figure 1. The flowchart of respondent selection

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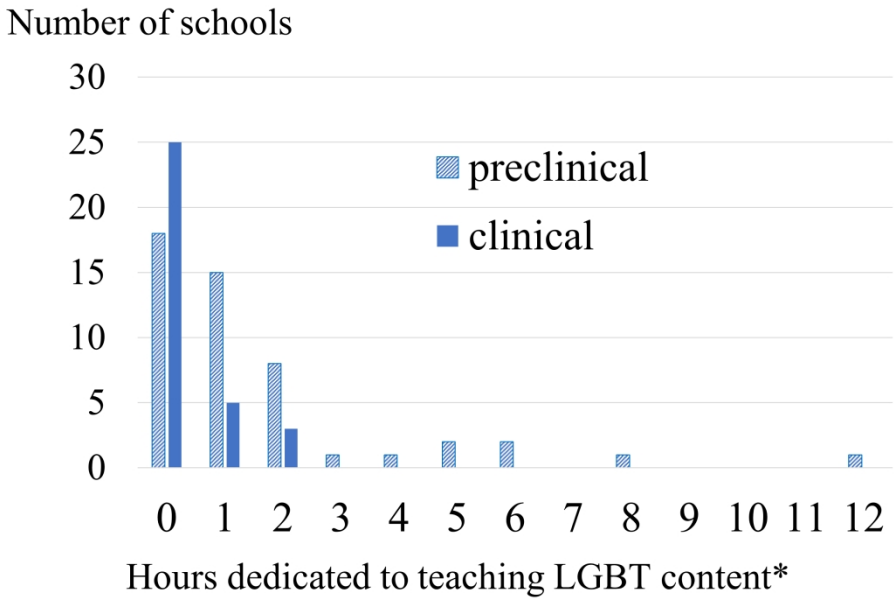

Figure 2. Hours dedicated to teaching LGBT content in Japanese medical schools

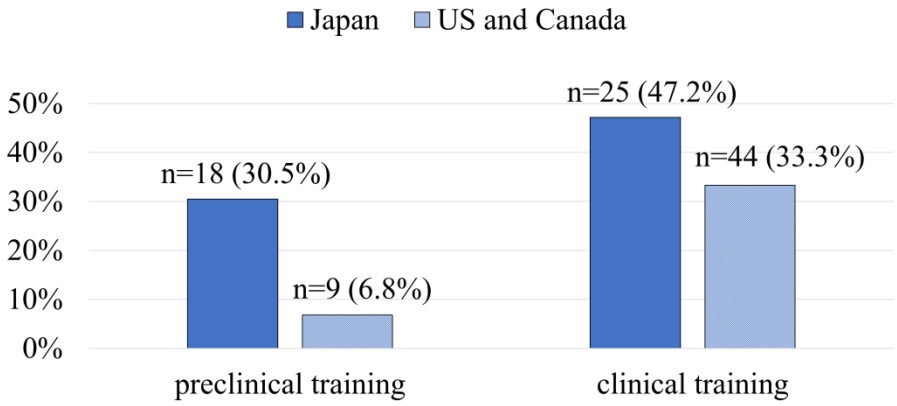

Figure 3. Proportion of schools that did not teach about LGBT content at all

STROBE Statement—Checklist of items that should be included in reports of ***cross-sectional studies***

	Item No	Recommendation	Page No
Title and abstract	1	(*a*) Indicate the study's design with a commonly used term in the title or the abstract	2
		(*b*) Provide in the abstract an informative and balanced summary of what was done and what was found	2
Introduction			
Background/rationale	2	Explain the scientific background and rationale for the investigation being reported	4-5
Objectives	3	State specific objectives, including any prespecified hypotheses	5
Methods			
Study design	4	Present key elements of study design early in the paper	5
Setting	5	Describe the setting, locations, and relevant dates, including periods of recruitment, exposure, follow-up, and data collection	5
Participants	6	(*a*) Give the eligibility criteria, and the sources and methods of selection of participants	5
Variables	7	Clearly define all outcomes, exposures, predictors, potential confounders, and effect modifiers. Give diagnostic criteria, if applicable	5
Data sources/ measurement	8*	For each variable of interest, give sources of data and details of methods of assessment (measurement). Describe comparability of assessment methods if there is more than one group	4-5
Bias	9	Describe any efforts to address potential sources of bias	5-6
Study size	10	Explain how the study size was arrived at	5
Quantitative variables	11	Explain how quantitative variables were handled in the analyses. If applicable, describe which groupings were chosen and why	6
Statistical methods	12	(*a*) Describe all statistical methods, including those used to control for confounding	6
		(*b*) Describe any methods used to examine subgroups and interactions	6
		(*c*) Explain how missing data were addressed	6
		(*d*) If applicable, describe analytical methods taking account of sampling strategy	N/A
		(*e*) Describe any sensitivity analyses	12
Results			
Participants	13*	(a) Report numbers of individuals at each stage of study—eg numbers potentially eligible, examined for eligibility, confirmed eligible, included in the study, completing follow-up, and analysed	6
		(b) Give reasons for non-participation at each stage	6
		(c) Consider use of a flow diagram	6
Descriptive data	14*	(a) Give characteristics of study participants (eg demographic, clinical, social) and information on exposures and potential confounders	6
		(b) Indicate number of participants with missing data for each variable of interest	6-13
Outcome data	15*	Report numbers of outcome events or summary measures	6-13
Main results	16	(*a*) Give unadjusted estimates and, if applicable, confounder-adjusted estimates and their precision (eg, 95% confidence interval). Make clear which confounders were adjusted for and why they were included	6-7

		(*b*) Report category boundaries when continuous variables were categorized	N/A
		(*c*) If relevant, consider translating estimates of relative risk into absolute risk for a meaningful time period	N/A
Other analyses	17	Report other analyses done—eg analyses of subgroups and interactions, and sensitivity analyses	10-11
Discussion			
Key results	18	Summarise key results with reference to study objectives	14
Limitations	19	Discuss limitations of the study, taking into account sources of potential bias or imprecision. Discuss both direction and magnitude of any potential bias	15-16
Interpretation	20	Give a cautious overall interpretation of results considering objectives, limitations, multiplicity of analyses, results from similar studies, and other relevant evidence	14-16
Generalisability	21	Discuss the generalisability (external validity) of the study results	15
Other information			
Funding	22	Give the source of funding and the role of the funders for the present study and, if applicable, for the original study on which the present article is based	16

*Give information separately for exposed and unexposed groups.

Note: An Explanation and Elaboration article discusses each checklist item and gives methodological background and published examples of transparent reporting. The STROBE checklist is best used in conjunction with this article (freely available on the Web sites of PLoS Medicine at http://www.plosmedicine.org/, Annals of Internal Medicine at http://www.annals.org/, and Epidemiology at http://www.epidem.com/). Information on the STROBE Initiative is available at www.strobe-statement.org.

BMJ Open

Cross-sectional survey of education on LGBT content in medical schools in Japan

Journal:	*BMJ Open*
Manuscript ID	bmjopen-2021-057573.R1
Article Type:	Original research
Date Submitted by the Author:	08-Jan-2022
Complete List of Authors:	Yoshida, Eriko; Jikei University School of Medicine, Division of Clinical Epidemiology, ; Kawasaki Kyodo Hospital, Department of General Internal Medicine Matsushima, Masato; Jikei University School of Medicine, Division of Clinical Epidemiology Okazaki, Fumiko; Jikei University School of Medicine, Center for Medical Education
Primary Subject Heading:	Medical education and training
Secondary Subject Heading:	Sexual health
Keywords:	MEDICAL EDUCATION & TRAINING, EPIDEMIOLOGY, SEXUAL MEDICINE

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TITLE PAGE

Title

Cross-sectional survey of education on LGBT content in medical schools in Japan

Authors

Eriko Yoshida, MD,[1,2] Masato Matsushima, MD, PhD, MPH,[1] and Fumiko Okazaki, MD, PhD[3]

Author affiliations

[1] *Division of Clinical Epidemiology, Research Center for Medical Sciences, The Jikei University School of Medicine, Tokyo, Japan*

[2] *Department of General Internal Medicine, Kawasaki-Kyodo Hospital, Kawasaki Health Cooperative Association, Kawasaki, Japan*

[3] *Center for Medical Education, The Jikei University School of Medicine, Tokyo, Japan*

Corresponding author

Eriko Yoshida, MD

Division of Clinical Epidemiology, Research Center for Medical Sciences, The Jikei University School of Medicine, Tokyo, Japan.

Address: Division of Clinical Epidemiology, The Jikei University School of Medicine

3-25-8 Nishishimbashi, Minato-ku, Tokyo, Japan

Zip code 105-8461

Telephone and fax number: 81-3-3433-1111(2399)

Email address: yoshidayoyo@jikei.ac.jp

Word Count: 4265 words

Cross-sectional survey of education on LGBT content in medical schools in Japan

Abstract

Objectives: We aimed to clarify current teaching on LGBT content in Japanese medical schools and compare it with data from the United States and Canada reported in 2011 and Australia and New Zealand reported in 2017.

Design: Cross-sectional study.

Setting： Eighty-two medical schools in Japan.

Participants: The Deans and/or relevant faculty members of the medical schools in Japan.

Primary outcome measure： Hours dedicated to teaching LGBT content in each medical school.

Results: In total, 60 schools (73.2%) returned a questionnaire. One was excluded because of missing values, leaving 59 responses (72.0%) for analysis. In total, LGBT content was included in preclinical training in 31 of 59 schools and in clinical training in eight of 53 schools. The proportion of schools that taught no LGBT content in Japan was significantly higher than that in the US and Canada, both in preclinical and clinical training ($p < 0.01$). The median time dedicated to LGBT content was one hour (25th–75th percentile 0–2 hours) during preclinical training and zero hours during clinical training (25th–75th percentile 0–0 hour). Only 13 schools (22%) taught students to ask about same-sex relations when obtaining a sexual history. Biomedical topics were more likely to be taught than social topics. In total, 45 of 57 schools (79%) evaluated their coverage of LGBT content as poor or very poor, and 23 schools (39%) had some students who had come out as LGBT. Schools with faculty members interested in education on LGBT content were more likely to cover it.

Conclusion: Education on LGBT content in Japanese medical schools is less established than in the US and Canada.

Strengths and limitations of this study

- This study used a questionnaire that included the same questions as previous studies to compare the quality and quantity of LGBT education in Japanese medical schools with that in the US/Canada and Australia/New Zealand.
- In addition to the questions used in the surveys in the US/Canada and Australia/New Zealand, our questionnaire included items investigating whether the presence of medical students/faculty who had come out and the presence of faculty interested in LGBT education were associated with covering LGBT content.
- Unlike a previous study in Japan, we distributed the questionnaire regarding LGBT content in education to all medical schools in the country.
- This survey was conducted approximately 2 years after the Australia/New Zealand survey and approximately 9 years after the US/Canada survey; therefore, our study involved the limitation of not being able to make contemporaneous comparisons with these countries.
- Because the questionnaire was sent to the Dean of the medical school, it may not have been given to a person with an overall understanding of LGBT education in medical schools.

Keywords: LGBT, medical education, undergraduate, Japan, international comparison

Introduction

Lesbian, gay, bisexual, transgender (LGBT) people are exposed to health inequities. These health disparities are partly attributable to social discrimination. In Japan, no nationwide survey of the size of the LGBT population has been undertaken by government. However, several surveys have been conducted at the municipal level. A survey conducted in Osaka City, the third largest city in Japan, revealed that 2.7% of respondents identified as LGBT. When individuals who identified as asexual were included, the figure was 3.3%.[1] Social discrimination and health disparities against LGBT people have also been reported in Japan. 58% of LGBT people in have been bullied in school,[2] and 61.4% of transgender people have reported difficulties finding a job because of their gender identity.[3] As for health disparities, for example, gay and bisexual men have higher rate of attempted suicide than heterosexual men[4] and transgender people have high rates of suicidal ideation.[5] Lesbian and bisexual women have high rates of self-harm.[6]

Furthermore, in Japan, it has been reported that there are barriers for LGBT people to access medical care, and that they are sometimes treated inappropriately in medical settings. More than 40% of transgender people reported that they had unpleasant experiences during medical visits or hesitated to seek medical care.[7] A survey of hospital nurse managers reported that more than 30% of hospitals allowed visitation and end-of-life care only to relatives, and partners of the opposite sex, but not to partners of the same sex.[8]

To eliminate these health disparities, healthcare providers should be equipped with better knowledge, skills and attitudes. A systematic review reported that medical staff and students' knowledge and attitude towards LGBT patients was improved by education.[9] Education may therefore be an important tool in improving medical care for LGBT patients. However, as shown in this review, most of the reports on medical education about LGBT content are mainly from the U.S., with limited reports from Asia. Understanding the cultural background is important in developing medical education about LGBT content in East Asian countries, which have different cultural backgrounds from the West.

In Japan, it has been suggested that there are few people who come out, making LGBT people less visible. For example, in a survey of 16 countries conducted by Ipsos, 46% of respondents answered that they had an LGBT person close to them, compared with only 5% of respondents in Japan, the second lowest of the 16 countries.[10] Tamagawa also commented that "a number of Japanese GLBT scholars and activists attest that it is extremely difficult, if not impossible, to come out of the closet in Japanese society"(p488).[11] In Japan, where LGBT people are thus less visible, the revision of the model core curriculum for medical education for the 2016 academic year (2017) was the first version to include a learning goal about being able to "explain gender

formation, sexual orientation, and ways of consideration for gender identification"(p43).[12] However, there are still no guidelines about what and how to teach LGBT-related content in medical education in Japan. Epidemiological studies are necessary to look at the current situation in detail and compare it with countries where education is already advanced. However, there is only one report in English describing the status of training on LGBT content in medical schools in Japan.[13] It had a low response rate and did not ask for details about the content of the education without direct comparison by survey data to other countries. Our study is the first attempt of which we are aware to survey the quantity and quality of education on LGBT content in Japanese medical schools and compare result with the data from other countries. We used a questionnaire developed for a previous study in the US and Canada[14] and subsequently used in a study in Australia and New Zealand[15] and compared results with data from those previous studies.

Methods

Participants and study setting

Questionnaires were mailed to the 82 Deans of the medical schools in Japan between July 2018 and January 2019. The aim and importance of our study were announced in the journal *Medical Education Japan* in April 2018.[16] We asked each Dean to complete the questionnaire, involving the director of education and/or relevant faculty members when necessary.

Questionnaire design

The questionnaire consisted of 18 questions, including 13 drawn from Obedin-Maliver et al.[14] and translated into Japanese with permission from the author and American Medical Association through the Copyright Clearance Center (Copyright © 2011 American Medical Association. All rights reserved).

Five new questions were also included: 1) the type of school (public or private/others), 2) whether any medical students had come out as LGBT, 3) whether any faculty members had come out as LGBT, 4) whether any faculty members were interested in education on LGBT content and 5) who completed the questionnaire.

The primary outcome was hours dedicated to teaching LGBT content in each medical school. The secondary outcomes were: teaching methods, the extent to which LGBT health areas are

taught, the evaluation methods of LGBT-related learning, and strategies to increase time devoted to education of LGBT content..

Data collection process

Data were collected between July 2018 and January 2019. If there was no response by the due date, we mailed the questionnaire twice more and contacted the school by telephone.

If schools did not wish to participate, we asked them to return the blank questionnaire. To confirm which universities had responded, the university name was included on the response envelope. The divisional clerk, who was not involved in the research, opened the envelopes and kept the answer sheets separately. The name of the university therefore could not be linked to the answers, and the completed questionnaires were treated as anonymous. The questionnaires included details of these processes. The questionnaire included information about the purpose of the study and how the answers would be used. Questionnaire completion was considered to show consent to participate in the study.

Data analysis

Each question was analyzed excluding missing values. We compared the proportions of medical schools that taught each LGBT topic between Japan and the US and Canada[14] using Fisher's test. This was also used to identify the statistical significance of the relationships between factors and teaching on LGBT content in Japan. Wilcoxon's rank sum test was used to test the significance of difference in hours spent teaching LGBT content between public and private/other schools. Testing excluded any answers indicating "declined to answer". All statistical analyses used Stata ver16.0.

Patient and public involvement

No patients involved.

Results

In total, 60 of the 82 schools (73.2%) responded, and 42 answered all questions. Four schools provided double answers to one question. We removed one respondent that did not answer 11 of

18 questions, leaving responses from 59 schools (72.0% of Japanese medical schools) for analysis. The remaining respondents had no more than six missing answers and were included in the analysis (Figure 1). Two researchers checked the double answers and agreed how to combine them.

Only 15 of the 59 Deans completed the questionnaire themselves. In 36 schools, the respondents were the directors of education, 11 were completed by obstetrician-gynecologists, eight by psychiatrists, eight by urologists and 24 by others (for example, other specialties or office workers). Of the 59 schools, 28 were public, 27 were private or others and four schools did not answer this question.

Education on LGBT content

In total, 31 of the 59 schools (52.5% of respondents) included LGBT content in preclinical training, 18 (30.5%) did not and 10 (16.9%) did not know how many hours were spent. For the 49 schools that provided this information for preclinical training, the median (25th–75th percentile) and mean (± standard deviation [SD]) hours were one hour (0–2 hours) and 1.6 (± 2.4) hours (Figure 2).

Only eight schools of 53 (15.1% of respondents) included LGBT content during clinical training, 25 schools (47.2%) did not cover it and 20 (37.7%) did not know. The median (25th–75th percentile) and mean (± SD) hours of the 33 schools were zero (0–0) hour and 0.3 (± 0.6) hours (Figure 2).

In total, 33 schools (55.9% of respondents) provided information about hours spent on teaching LGBT content across the whole curriculum. The median (25th–75th percentile) and mean (± SD) were zero (0–2) hours and 1.4 (± 2.4) hours. Six schools provided no information about clinical training time, resulting in fewer schools for analysis of total time. The median and mean total time were therefore shorter than the preclinical time.

There was no statistically significant relationship between type of school (public or private/other) and teaching about LGBT content (Fisher's exact test, preclinical $p = 0.38$, clinical $p = 0.65$, total $p = 0.24$). The time spent in preclinical and clinical training was also not significantly different between public and private/other schools (Wilcoxon's rank-sum test, $p=0.19$, $p=0.76$).

In total, 51 schools provided information about whether their curricula covered 16 LGBT-related topics. Of these, 15 (29.4%) covered at least half the topics. For each topic, the number of

schools that responded that it was taught in the required or elective curriculum and that it did not need to be taught are summarized in Table 1.

In total, 37 respondents of 57 (64.9%) did not evaluate students' knowledge about LGBT content. The most frequent form of evaluation was a written examination (16 of 57, 28.1%). No schools used faculty-observed patient interactions or evaluation by patients, and only one used peer-to-peer evaluations and evaluation by standardized patients. The free-text responses included answers such as reaction papers, reports, presentations and oral examinations.

The strategies that could be used to increase training on LGBT content are shown in Table 2. The most common was "Faculty willing and able to teach LGBT-related curricular content".

Table 1. Proportion of schools teaching particular LGBT topics in the required or elective curriculum and answering 'coverage not needed' about each topic

	Available in required or elective curriculum (N = 51)	Coverage not needed (N = 53)
Disorders of Sex Development (DSD)/Intersex	23 (45%)	2 (4%)
HIV in LGBT people	20 (39%)	2 (4%)
Gender identity	19 (37%)	3 (6%)
Sexual orientation	17 (33%)	6 (11%)
Coming out	16 (31%)	6 (11%)
Transitioning	16 (31%)	3 (6%)
Sex reassignment surgery (SRS)	16 (31%)	2 (4%)
Sexually transmitted infections (not HIV) in LGBT people	15 (29%)	2 (4%)
Barriers to accessing medical care for LGBT people	14 (27%)	5 (9%)
Mental health in LGBT people	14 (27%)	5 (9%)
LGBT adolescent health	7 (14%)	5 (9%)
Body image in LGBT people	7 (14%)	6 (11%)
Alcohol, tobacco, or other drug use among LGBT people	5 (10%)	7 (13%)
Chronic disease risk for LGBT populations	5 (10%)	4 (8%)
Safer sex for LGBT people	4 (8%)	6 (11%)
Unhealthy relationships among LGBT people	0 (0%)	5 (9%)

These items were taken from questions 8 and 9 from the questionnaire by Obedin-Maliver et al.[14]

Table 2. Possible strategies to increase LGBT-specific content* (N = 50)

	No. of respondents (%)
Faculty willing and able to teach LGBT-related curricular content	29 (58.0)
Curricular material coverage required by accreditation bodies	24 (48.0)
Questions based on LGBT health/health disparities on national examinations	20 (40.0)
More time in the curriculum to be able to teach LGBT-related content	20 (40.0)
Curricular material focusing on LGBT-related health/health disparities	16 (32.0)
Increased financial resources	10 (20.0)
More evidence-based research regarding LGBT health/health disparities	8 (16.0)
Logistical support for teaching LGBT-related curricular content	6 (12.0)
Methods to evaluate LGBT curricular content	6 (12.0)
Don't know	9 (18.0)
Other	3 (6.0)

* To focus on what would help in future, we specifically asked about future strategies rather than current success strategies. These items were taken from question 13 from the questionnaire by Obedin-Maliver et al.[14]

Original questions

The results of our new questions are shown in Table 3. There were no relationships between whether any students or faculty members had come out and teaching about LGBT content (Fisher's exact test, $p = 0.31$, $p = 0.29$). The schools that clearly indicated that they had faculty members interested in education on LGBT content were more likely to cover it (Fisher's exact test, $p < 0.01$).

Table 3. Responses to our original question (N = 59)

Were/are there	Yes	No	Don't know	Declined to answer
Any students who had come out as LGBT?	23 (39.0%)	10 (17.0%)	20 (33.9%)	6 (10.2%)
Any faculty members who had come out as LGBT?	7 (11.9%)	11 (18.6%)	37 (62.7%)	4 (6.8%)
Faculty members interested in education on LGBT content?	27 (45.8%)	1 (1.7%)	30 (50.9%)	1 (1.7%)

Comparison between Japan, the US/Canada and Australia/New Zealand

Only nine of 132 schools (6.8%) in the US and Canada did not include LGBT content in preclinical training.[14] The proportion of schools not teaching it in Japan (18 of 59 schools, 30.5%) was therefore much higher (Fisher's exact test, $p < 0.01$) (Figure 3). Even if all the schools that responded 'not known' had provided education on LGBT content during preclinical training in Japan, the proportion of schools not teaching about LGBT content would still be significantly higher in Japan than the US and Canada (Fisher's exact test, $p < 0.01$). In the US and Canada, 44 of 132 schools (33.3%) did not include LGBT content during clinical training,[14] which was significantly less than in Japan (25 of 53 schools, 47.2%) (Fisher's exact test, $p < 0.01$) (Figure 3). There were also significant differences in both pre-clinical and clinical training when schools that answered "don't know" were excluded (Fisher's exact test, $p < 0.01$). We were unable to statistically compare our data with Australia and New Zealand, because there was no information about how many schools there did not teach about LGBT content.[15]

In the US and Canada, the median time (25th–75th percentile) spent on LGBT content during preclinical and clinical training was 4 (2–6) and 2 (0–3) hours, [14] longer than the 1 (0–2) and zero (0–0) hours in Japan. The study in Australia and New Zealand did not provide the median hours. [15]

The detailed comparison between Japan, the US/Canada[14] and Australia/New Zealand[15] is shown in Table 4. There were too few data from Australia and New Zealand for detailed statistical comparisons.

Table 4. Comparison of education on LGBT content between Japan, the US and Canada, and Australia and New Zealand

		Japan		U.S. and Canada[14]		Australia and New Zealand[15]	
No. of responders/total no. of schools (proportion)		59/82 (72%)		132/176 (75%)		15/21 (71%)	
Methods of teaching LGBT content				Number (proportion)			
LGBT-specific content in the required preclinical curriculum[†]	interspersed	19	(32.8%)	88	(66.7%) *	9	(60.0%)
	discrete modules	11	(19.0%)	32	(24.2%)	5	(33.3%)
Lectures or small-group sessions in the required clinical curriculum[‡]		12	(20.3%)	79	(59.8%) *	2/1[‖]	(13.3%/6.6%)
Clinical clerkship site that is specifically designed to facilitate LGBT patient care[§]	required clerkship	0	(0.0%)	7	(5.3%)	5[¶¶]	(33.3%)
	elective clerkship	0	(0.0%)	12	(9.1%) **	7[¶¶]	(46.6%)
Faculty development for teaching about LGBT health[ǀ]		5	(8.5%)	27	(20.5%)	0	(0.0%)
Coverage of LGBT content				Number (proportion)			
Asking about same-sex relations when obtaining sexual history[¶]		13	(22.0%)	128	(97.0%) *	12	(80.0%)
Teaching difference between behavior and identity[††]		17	(28.8%)	95	(72.0%) *	10	(66.7%)
At least half of 16 LGBT-related topics covered in elective or required curriculum[‡‡]		15	(29.4%)	99	(75.0%) *	-	-
Evaluation of coverage of LGBT content (very poor/poor)[§§]		45	(79.0%)	34	(25.8%) *	3	(20.0%)

* P value < 0.01, ** P value < 0.05 for comparison of the proportions of schools that answered yes between Japan and U.S./Canada

Number answering "Do not know"/ missing value among Japanese responses: [†]3/1, [‡]11/0, [§]0/0, [ǀ]4/0, [¶]17/0, [††]10/0, [‡‡]10/8 [§§]3/2

[‖]Two schools had lectures and one had small-group sessions. Sanchez AA et al asked separately about lectures and small-group sessions. [15]

[¶¶]Two schools had clinical rotation site as a required clinical rotation, four as an elective and three as both. [15]

Items on methods of teaching LGBT content and coverage of LGBT content were cited from or corresponding to questions 2–5, and 6, 7, 8, and 10 of the questionnaire by Obedin-Maliver et al.[14]

Discussion

This survey was the first attempt to compare education about LGBT content in medical schools in Japan with other countries. A much higher proportion of schools did not teach about LGBT content in Japan than in the US and Canada. The coverage of LGBT topics was also much lower in Japan than in the US/Canada and Australia/New Zealand. Faculty members interested in teaching LGBT content could be important in increasing its coverage in medical education.

In total, 31 of 59 schools said they taught about LGBT content. In contrast, a previous study by Yamazaki et al. reported that only 22 of 37 schools provided lectures or workshops on sexual and gender minorities in Japan.[13] This is because the methodology in selecting target schools was different from ours, which resulted in the longer lecture time (median 130 minutes) than ours. In Yamazaki et al.'s study, one faculty member was first selected from each of 80 medical schools based on a list of a medical education organization. Next, double postcards were sent to each of the 80 selected faculty members asking them to refer a key person who could provide accurate information about lectures on sexual and gender minorities (SGM) in their medical schools. Among 47 schools for which postcards were returned, 43 were considered eligible for the survey. Finally, the second questionnaire about lectures on SGM were sent, and 37 schools responded. Thus, the final response rate was 46.3% (37/80).[13] Accordingly, the current study has the strength of having a better response rate than that of Yamazaki et al. Both our study and that of Yamazaki et al.[13] suggested that the time spent teaching about LGBT content is significantly lower in Japan than in the US and Canada. Our study also showed that a much higher proportion of schools in Japan do not include LGBT content during either preclinical or clinical training than in the US and Canada.[14] Nine years have passed since the survey in the US and Canada,[14] but the curricula in Japan are still less established.

The quality of education on LGBT content was also lower in Japan than in the US/Canada and Australia/New Zealand. Some topics were not considered to be necessary by some Japanese respondents. Biomedical topics such as HIV and disorders of sex development (DSDs) were more likely to be taught than social topics such as unhealthy relationships, safer sex and substance abuse, Although teaching about DSDs is important, it is not a substitute for teaching LGBT content. The term LGBTI is sometimes used to include intersex in LGBT in Japan,[17] whereas DSDs refer to a wide range of congenital conditions, not sexual orientation or gender identity. We believe that the lack of educational guidelines on LGBT content means that there has been little discussion about what should be taught, resulting in lack of acknowledgement of the importance of social problems among LGBT people. In contrast, in the US, the guideline for

medical education from the Association of American Medical Colleges (AAMC) summarized the health disparities of individuals who are LGBT, gender nonconforming, or born with DSD, including social issues, and provided professional competency objectives to improve health care for those people.[18]

Additional questions in our survey were designed to explore the factors that promote LGBT education. A study in the U.S. and Canada found that East Asian medical students were less likely to come out about their sexual identity than white students,[19] so we assumed that sexuality would also tend to be hidden in medical schools in Japan as well. We hypothesized that openly LGBT students or staff might stimulate interest. Of respondent schools, 39% had students who had come out as LGBT, which was more than we expected. However, we found no relationship between teaching time and whether there were LGBT staff or students who came out. It is possible that staff or students coming out may be considered a single case, not a common issue, and therefore not result in changes in educational policy in the school.

The reasons why LGBT-related education in Japan is so much worse in both quantity and quality may be both socio-cultural and medical-educational. Socio-culturally, there are no anti-discrimination laws regarding sexual orientation or gender identity, and same-sex marriages have not been approved in Japan. Cultures and social systems that protect the rights of LGBT people may therefore be less mature in Japan. This could make it difficult for LGBT people to come out. In medical settings, 58% of LGBT people who accessed medical services for mental health issues did not disclose their sexual orientation or gender identity to staff.[20] It may therefore be hard for healthcare professionals to identify LGBT patients as such. However, the movement for the rights of LGBT people in Japan is slowly making progress. For example, there is a growing movement at the local government level to issue certificates for same-sex partnerships. Medical institutions are also beginning to provide support for LGBT people. For example, Juntendo University Hospital in Tokyo established a working group in 2021 to consider and respond to patients, families and staff regarding sexual orientation and gender identity, and has started activities such as providing learning opportunities for medical staff and a sexual orientation and gender identity consultation service.[21]

From a medical education perspective, Yamazaki et al reported that the most common reason for not teaching LGBT content in Japanese medical schools was unavailability of suitable instructors.[13] In our study, the most popular future strategy for increasing the time on LGBT content was “Faculty willing and able to teach LGBT-related curricular content”. We found that schools with faculty members interested in education on LGBT content were more likely to cover this topic. We therefore believe it is essential to provide more opportunities for faculty members to acquire the skills to teach about LGBT issues. Yamazaki et al. recommended the

following six steps to promote medical education on SGM: engaging appropriate stakeholders, developing a textbook or educational guide for SGM education, and developing a diverse curriculum team for each medical school, as well as conducting faculty development, curriculum development, and curriculum evaluation.[13] We believe that all of these steps are necessary in Japan. Our study highlighted the importance of the third step "diverse curriculum team for each medical school" and the fourth step "conducting faculty development". In Japan, although workshops have been held to devise and implement education about LGBT content in medical education courses, such meetings are not conducted on a continuous basis. Accessible online courses could potentially provide valuable opportunities for more educators in Japan to learn about teaching LGBT content, such as those offered by Stanford Medicine.[22] The current results also revealed that one school in Japan had made outstanding progress, spending 12 hours on LGBT education. It would be useful to share information about how this school started and evolved their teaching, so that schools who are not currently teaching LGBT content at all can start teaching it. There is also an urgent need in Japan to develop guidelines for medical education on LGBT content. In addition to education provided by each medical school, internet resources such as AAMC material can be used to provide opportunities for all medical students in Japan to learn LGBT content.[23]

To the best of our knowledge, no previous survey has examined the current status of post-graduate education for physicians on LGBT issues in Japan. Although a small number of lectures and workshops have recently been held in the level of academic society,[24,25] the opportunities for physicians to learn about LGBT content after graduation are still limited. Therefore, it is important to provide opportunities for education on LGBT content in undergraduate education.

The inadequacy of medical education probably reflects the current state of medical practice in Japan. To reduce health disparities among LGBT people, it is necessary to examine whether LGBT people are being properly cared for in medical settings in countries where LGBT is invisible, such as Japan, as well as improving medical education.

Limitations

This study had some limitations. First, a high response rate was considered essential to enable comparisons with previous studies, so we actively followed up questionnaires, which increased the response rate from 47.6% after the first mail. However, the final response rate was just 73.2% (60 of 82 schools) which was lower than the 85.2% (150 of 176 schools) in the US and Canada.[14] The results should therefore be interpreted with caution.

Second, we calculated the proportion of schools for each question excluding missing values. The studies in the US and Canada[14] and in Australia and New Zealand[15] both used list-wise case deletion. Using this method, the proportion of schools including LGBT content in preclinical and clinical training decreased from 52.5% (31 of 59 schools) and 15.1% (eight of 53 schools) to 35.7% (15 of 42 schools) and 11.9% (five of 42), an even bigger difference with the US and Canada. The median (25th–75th percentile) and mean (± SD) time were one (0–1.2) hour and 1.4 (± 2.5) hours during preclinical training, and zero (0–0) hours and 0.25 (± 0.6) hours during clinical training, which were very similar to our previous figures.

Third, there were some double answers for one question. This may be because the questionnaire had been given to individual departments rather than a key faculty member aware of the overall education curriculum. It is therefore not clear whether the responses accurately reflected the current situation. However, this confusion probably reflects a lack of coordinated training on LGBT content.

Fourth, the survey in the US and Canada used as a comparison were conducted in 2009–2010, [14] approximately nine years before the current study. In 2014, after this study was conducted, the AAMC published practical, detailed and evidence-based recommendation for educational curricula on LGBT content.[18] Furthermore, in 2015, same-sex marriage was legalized across the US. Over the past ten years, various attempts and advances in medical education on LGBT content have been reported from the US and Canada.[26,27] Considering these developments, the gap between Japan and the US and Canada may currently be expanding.

Conclusions

The median time given to LGBT content during preclinical training was one hour, and 30.5% of respondents did not include any time. During clinical training, the median time was zero hours, only 15.1% of respondents included dedicated time and 47.2% did not cover it at all. The coverage of LGBT topics in medical education was much lower in Japan than in the US/Canada and Australia/New Zealand. To promote education about LGBT content, it is necessary to train faculty members to be able to teach these topics.

Data sharing statement

No additional data are available.

Ethics statements

Patient consent for publication

Not required.

Ethics approval

The study was approved by the ethics committee of the Jikei University School of Medicine for Biomedical Research (ref no. 30-042(9063)).

Acknowledgements

The authors would like to thank Professor Osamu Fukushima for his help in distributing our questionnaire. We also thank Ms. Chikako Mori, the clerk in our division, for her support, and Melissa Leffler, MBA, and Benjamin Knight, MSc., from Edanz (https://jp.edanz.com/ac) for editing a draft of this manuscript.

Figure Legends

Figure 1. The flowchart of respondent selection

Figure 2. Hours dedicated to teaching LGBT content in Japanese medical schools

Footnote: *The numbers after the decimal point were rounded up.

Figure 3. Proportion of schools that did not teach about LGBT content at all

Footnote: The data of the US and Canada was quoted from Obedin-Maliver et al.[14]

Footnotes

Author Contributors

EY designed the study, was primarily responsible for data collection, data analysis, interpretation and drafted the manuscript. MM designed the study, contributed to the interpretation of data, and reviewed the manuscript. FO interpreted the results and reviewed the manuscript. All co-authors reviewed and approved the article prior to submission.

Funding

This study was supported by the Jikei University Research Fund for Graduate Students (grant number: N/A).

Disclaimer

The sponsor of this study had no role in the study design; the study conduct including collection, analysis, or interpretation of the data; the manuscript preparation; or the decision to submit the manuscript for publication.

Competing interests

MM received lecture fees and lecture travel fees from the Centre for Family Medicine Development of the Japanese Health and Welfare Co-operative Federation. MM is an adviser of the Centre for Family Medicine Development Practice-Based Research Network, and a program

director of the Jikei Clinical Research Program for Primary Care. MM's son-in-law worked at IQVIA Services Japan K.K., which is a contract research organization and a contract sales organization. MM's son-in-law works at SYNEOS HEALTH CLINICAL K.K. which is a contract research organization and a contract sales organization. EY is a former trainee of the Jikei Clinical Research Program for Primary Care.

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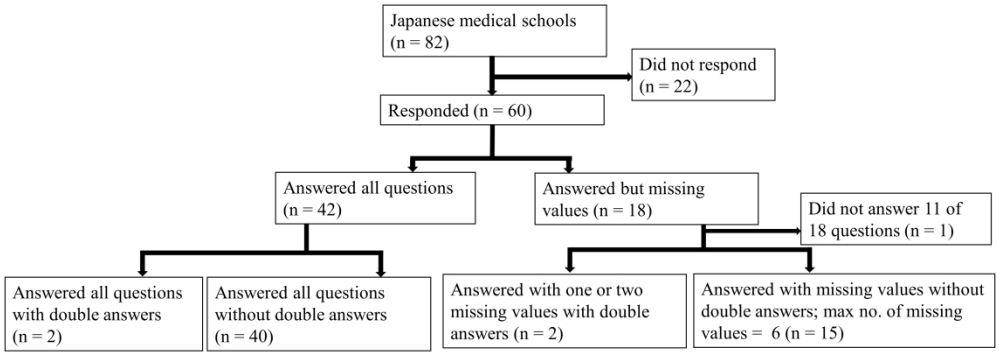

Figure 1. The flowchart of respondent selection

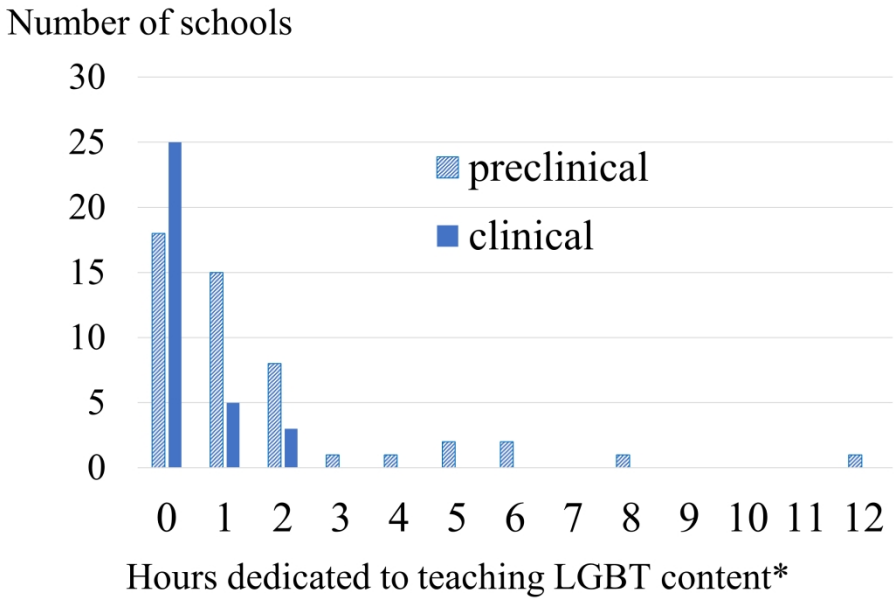

Figure 2. Hours dedicated to teaching LGBT content in Japanese medical schools

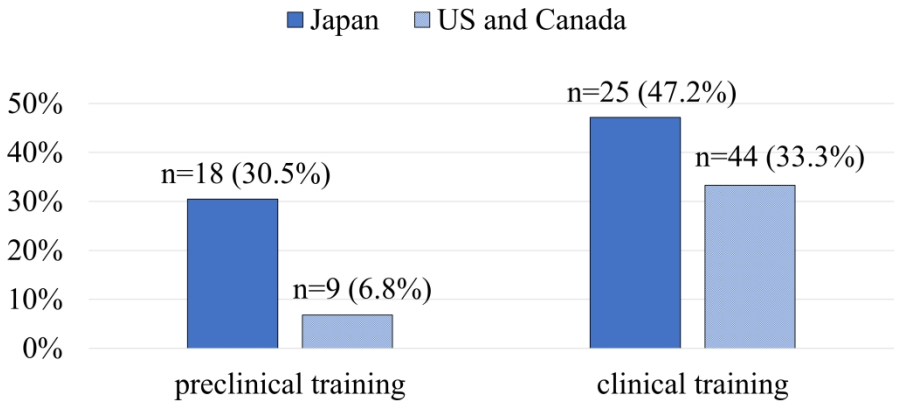

Figure 3. Proportion of schools that did not teach about LGBT content at all

STROBE Statement—Checklist of items that should be included in reports of ***cross-sectional studies***

	Item No	Recommendation	Page No
Title and abstract	1	(*a*) Indicate the study's design with a commonly used term in the title or the abstract	2
		(*b*) Provide in the abstract an informative and balanced summary of what was done and what was found	2
Introduction			
Background/rationale	2	Explain the scientific background and rationale for the investigation being reported	4-5
Objectives	3	State specific objectives, including any prespecified hypotheses	5
Methods			
Study design	4	Present key elements of study design early in the paper	5
Setting	5	Describe the setting, locations, and relevant dates, including periods of recruitment, exposure, follow-up, and data collection	5
Participants	6	(*a*) Give the eligibility criteria, and the sources and methods of selection of participants	5
Variables	7	Clearly define all outcomes, exposures, predictors, potential confounders, and effect modifiers. Give diagnostic criteria, if applicable	5
Data sources/ measurement	8*	For each variable of interest, give sources of data and details of methods of assessment (measurement). Describe comparability of assessment methods if there is more than one group	4-5
Bias	9	Describe any efforts to address potential sources of bias	5-6
Study size	10	Explain how the study size was arrived at	5
Quantitative variables	11	Explain how quantitative variables were handled in the analyses. If applicable, describe which groupings were chosen and why	6
Statistical methods	12	(*a*) Describe all statistical methods, including those used to control for confounding	6
		(*b*) Describe any methods used to examine subgroups and interactions	6
		(*c*) Explain how missing data were addressed	6
		(*d*) If applicable, describe analytical methods taking account of sampling strategy	N/A
		(*e*) Describe any sensitivity analyses	12
Results			
Participants	13*	(a) Report numbers of individuals at each stage of study—eg numbers potentially eligible, examined for eligibility, confirmed eligible, included in the study, completing follow-up, and analysed	6
		(b) Give reasons for non-participation at each stage	6
		(c) Consider use of a flow diagram	6
Descriptive data	14*	(a) Give characteristics of study participants (eg demographic, clinical, social) and information on exposures and potential confounders	6
		(b) Indicate number of participants with missing data for each variable of interest	6-13
Outcome data	15*	Report numbers of outcome events or summary measures	6-13
Main results	16	(*a*) Give unadjusted estimates and, if applicable, confounder-adjusted estimates and their precision (eg, 95% confidence interval). Make clear which confounders were adjusted for and why they were included	6-7

		(*b*) Report category boundaries when continuous variables were categorized	N/A
		(*c*) If relevant, consider translating estimates of relative risk into absolute risk for a meaningful time period	N/A
Other analyses	17	Report other analyses done—eg analyses of subgroups and interactions, and sensitivity analyses	10-11
Discussion			
Key results	18	Summarise key results with reference to study objectives	14
Limitations	19	Discuss limitations of the study, taking into account sources of potential bias or imprecision. Discuss both direction and magnitude of any potential bias	15-16
Interpretation	20	Give a cautious overall interpretation of results considering objectives, limitations, multiplicity of analyses, results from similar studies, and other relevant evidence	14-16
Generalisability	21	Discuss the generalisability (external validity) of the study results	15
Other information			
Funding	22	Give the source of funding and the role of the funders for the present study and, if applicable, for the original study on which the present article is based	16

*Give information separately for exposed and unexposed groups.

Note: An Explanation and Elaboration article discusses each checklist item and gives methodological background and published examples of transparent reporting. The STROBE checklist is best used in conjunction with this article (freely available on the Web sites of PLoS Medicine at http://www.plosmedicine.org/, Annals of Internal Medicine at http://www.annals.org/, and Epidemiology at http://www.epidem.com/). Information on the STROBE Initiative is available at www.strobe-statement.org.