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

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3 4	1	TITLE PAGE
4 5 6	2	Title
7 8	3	Cross-sectional survey of education on LGBT content in medical schools in Japan
9 10	4	
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52 53	24	
54 55 56	25	Word Count: 3318 words
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26	Cross-sectional survey of education on LGBT content in medical schools in Japan
27	Abstract
28	Objectives: We aimed to clarify current teaching on LGBT content in Japanese
29	medical schools and compare it with data from the United States and Canada
30	reported in 2011 and Australia and New Zealand reported in 2017.
31	Design: Cross-sectional study.
32	Setting : Eighty-two medical schools in Japan.
33	Participants: The Deans and/or relevant faculty members of the medical schools in
34	Japan.
	Primary outcome measure : Hours dedicated to teaching LGBT content in each medical
36	school.
37	<i>Results:</i> 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
43	(22%) taught students to ask about same-sex relations when obtaining a sexual
44	history. Biomedical topics were more likely to be taught than social topics. In total,
45	45 of 57 schools (79%) evaluated their coverage of LGBT content as poor or very
46	poor, and 23 schools (39%) had some students who had come out as LGBT.
47	Schools with faculty members interested in education on LGBT content were more
48	likely to cover it.
<i>4</i> 9	Conclusion: Education on LGBT content in Japanese medical schools is less
	established than in the US and Canada.
50	established than in the 05 and Canada.
51	Strengths and limitations of this study
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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

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 education, undergrac.

 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

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3 4	65	Introduction
5	66	Lesbian, gay, bisexual, transgender (LGBT) people are exposed to health inequalities. These
6 7	67	health disparities are partly attributable to social discrimination. In Japan, 58% of LGBT people
8 9	68	in have been bullied in school, ¹ and 61.4% of transgender people have reported difficulties
9 10	69	finding a job because of their gender identity. ² As for health disparities, for example, gay and
11 12	70	bisexual men have higher rate of attempted suicide than heterosexual men ³ and transgender
12	71	people have high rates of suicidal ideation. ⁴ Lesbian and bisexual women have high rates of self-
14 15	72	harm. ⁵
16	73	Furthermore, In Japan, it has been reported that there are barriers for LGBT people to access
17 18	74	medical care, and that they are sometimes treated inappropriately in medical settings. More than
19	75	40% of transgender people reported that they had unpleasant experiences during medical visits or
20 21	76	hesitated to seek medical care. ⁶ A survey of hospital nurse managers reported that more than
22	77	30% of hospitals allowed visitation and end-of-life care only to relatives, and partners of the
23 24	78	opposite sex, but not to partners of the same sex. ⁷
25	79	To eliminate these health disparities, healthcare providers should be equipped with better
26 27	80	knowledge, skills and attitudes. A systematic review reported that medical staff and students'
28	81	knowledge and attitude towards LGBT patients was improved by education. ⁸ Education may
29 30	82	therefore be an important tool in improving medical care for LGBT patients. However, as shown
31	83	in this review, most of the reports on medical education about LGBT content are mainly from the
32 33	84	U.S., with limited reports from Asia. Understanding the cultural background is important in
34	85	developing medical education about LGBT content in East Asian countries, which have different
35 36	86	cultural backgrounds from the West.
37	87	In Japan, it has been suggested that there are few people who come out, making LGBT people
38 39	88	less visible. For example, in a survey of 16 countries conducted by Ipsos, 46% of respondents
40	89	answered that they had an LGBT person close to them, compared with only 5% of respondents in
41 42	90	Japan, the second lowest of the 16 countries. ⁹ Tamagawa also commented that "a number of
43	91	Japanese GLBT scholars and activists attest that it is extremely difficult, if not impossible, to
44 45	92	come out of the closet in Japanese society"(p488). ¹⁰ In Japan, where LGBT people are thus less
46	93	visible, the revision of the model core curriculum for medical education for the 2016 academic
47 48	94	year (2017) was the first version to include a learning goal about being able to "explain gender
49	95	formation, sexual orientation, and ways of consideration for gender identification"(p43). ¹¹
50 51	96	However, there are still no guidelines about what and how to teach LGBT-related content in
52	97	medical education in Japan. Epidemiological studies are necessary to look at the current situation
53 54	98	in detail and compare it with countries where education is already advanced. However, there is
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99	only one report in English describing the status of training on LGBT content in medical schools
100	in Japan. ¹² It had a low response rate and did not ask for details about the content of the
101	education without direct comparison by survey data to other countries. Our study is the first
102	attempt of which we are aware to survey the quantity and quality of education on LGBT content
103	in Japanese medical schools and compare result with the data from other countries. We used a
104	questionnaire developed for a previous study in the US and Canada ¹³ and subsequently used in a
105	study in Australia and New Zealand ¹⁴ and compared results with data from those previous
106	studies.
107	Methods
108	Participants and study setting
109	Questionnaires were mailed to the 82 Deans of the medical schools in Japan between July 2018
110	and January 2019. The aim and importance of our study were announced in the journal Medical
111	Education Japan in April 2018. ¹⁵ We asked each Dean to complete the questionnaire, involving
112	the director of education and/or relevant faculty members when necessary.
113	
114	Questionnaire design
115	The questionnaire consisted of 18 questions, including 13 drawn from Obedin-Maliver et al. ¹³
116	and translated into Japanese with permission from the author and American Medical Association
117	through the Copyright Clearance Center (Copyright © 2011 American Medical Association. All
118	rights reserved).
119	Five new questions were also included: 1) the type of school (public or private/others), 2)
120	whether any medical students had come out as LGBT, 3) whether any faculty members had come
121	out as LGBT, 4) whether any faculty members were interested in education on LGBT content
122	and 5) who completed the questionnaire.
123	The primary outcome was hours dedicated to teaching LGBT content in each medical school.
124	
125	Data collection process
125	Data were collected between July 2018 and January 2019. If there was no response by the due
120	date, we mailed the questionnaire twice more and contacted the school by telephone.
12/	date, we maned the questionnane twice more and contacted the school by telephone.
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3	128	If schools did not wish to participate, we asked them to return the blank questionnaire. To
4 5	129	confirm which universities had responded, the university name was included on the response
6	130	envelope. The divisional clerk, who was not involved in the research, opened the envelopes and
7 8	131	kept the answer sheets separately. The name of the university therefore could not be linked to the
9	132	answers, and the completed questionnaires were treated as anonymous. The questionnaires
10 11	133	included details of these processes. The questionnaire included information about the purpose of
12	134	the study and how the answers would be used. Questionnaire completion was considered to show
13 14	135	consent to participate in the study.
15	136	
16 17		
18 19	137	Data analysis
20	138	Each question was analyzed excluding missing values. We compared the proportions of medical
21 22	139	schools that taught each LGBT topic between Japan and the US and Canada using Fisher's test.
23	140	This was also used to identify the statistical significance of the relationships between factors and
24 25	141	teaching on LGBT content in Japan. Testing excluded any answers indicating "declined to
26	142	answer". All statistical analyses used Stata ver16.0.
27 28	143	
29		
30 31	144	Results
32 33	145	In total, 60 of the 82 schools (73.2%) responded, and 42 answered all questions. Four schools
33 34	146	provided double answers to one question. We removed one respondent that did not answer 11 of
35 36	147	18 questions, leaving responses from 59 schools (72.0% of Japanese medical schools) for
37	148	analysis. The remaining respondents had no more than six missing answers and were included in
38 39	149	the analysis (Figure 1). Two researchers checked the double answers and agreed how to combine
40	150	them.
41 42	151	Only 15 of the 59 Deans completed the questionnaire themselves. In 36 schools, the
43	152	respondents were the directors of education, 11 were completed by obstetrician-gynecologists,
44 45	153	eight by psychiatrists, eight by urologists and 24 by others (for example, other specialties or
46	154	office workers). Of the 59 schools, 28 were public, 27 were private or others and four schools did
47 48	155	not answer this question.
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56 Education on LGBT content

157 In total, 31 of the 59 schools (52.5% of respondents) included LGBT content in preclinical 158 training, 18 (30.5%) did not and 10 (16.9%) did not know how many hours were spent. For the 159 49 schools that provided this information for preclinical training, the median (25th–75th 160 percentile) and mean (\pm standard deviation [SD]) hours were one hour (0–2 hours) and 1.6 (\pm 161 2.4) hours (Figure 2).

162 Only eight schools of 53 (15.1% of respondents) included LGBT content during clinical 163 training, 25 schools (47.2%) did not cover it and 20 (37.7%) did not know. The median (25th– 164 75th percentile) and mean (\pm SD) hours of the 33 schools were zero (0–0) hour and 0.3 (\pm 0.6) 165 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 (\pm SD) were zero (0–2) hours and 1.4 (\pm 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-

- 174 related topics. Of these, 15 (29.4%) covered at least half the topics. For each topic, the number of
 175 schools that responded that it was taught in the required or elective curriculum and that it did not
 176 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
- 180 peer-to-peer evaluations and evaluation by standardized patients. The free-text responses
- ⁴⁵ 181 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".

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184	Table 1. Proportion of schools teaching particular LGBT topics in the required or elective curricu	ໄພຼັ່ງກ	â	d answering 'coverage
185	not needed' about each topic	cluc	5	

	Available in required or	Caverage not needed
	elective curriculum (N = 51)	G C Sverage not needed of OS (N = 53)
Disorders of Sex Development (DSD)/Intersex	23 (45%)	See 18 2 (4%) elatas 2 (4%) Erasmushogeschool 3 (6%) to text and data 3 (6%) data 3 (6%) to text and data 3 (6%) mining, 2 (4%)
HIV in LGBT people	20 (39%)	elate 2 (4%)
Gender identity	19 (37%)	d to 022. 3 (6%)
Sexual orientation	17 (33%)	text text
Coming out	16 (31%)	and 6 (11%)
Transitioning	16 (31%)	data 3 (6%)
Sex reassignment surgery (SRS)	16 (31%)	mi: for 2 (4%)
Sexually transmitted infections (not HIV) in LGBT people	15 (29%)	ning, 2 (4%)
Barriers to accessing medical care for LGBT people	14 (27%)	Al traini
Mental health in LGBT people	14 (27%)	Al training 5 (9%) anining 5 (9%)
LGBT adolescent health	7 (14%)	1 1 1 1 1 1 1 1 1 1
Body image in LGBT people	7 (14%)	nd <u>n</u> . 6 (11%)
Alcohol, tobacco, or other drug use among LGBT people	5 (10%)	
Chronic disease risk for LGBT populations	5 (10%)	arte 2 4 (8%)
Safer sex for LGBT people	4 (8%)	chnc 6 (11%)
Unhealthy relationships among LGBT people	0 (0%)	blogies.
These items were taken from questions 8 and 9 from the questionr	aire by Obedin-Maliver et al. ¹³	25 at Department GEZ-LTA vs.

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		BMJ Open	No. of respondents (% for u
18	88	Table 2. Possible strategies to increase LGBT-specific content* (N = 50)	ight, includ
			No. of respondents (%)
		Faculty willing and able to teach LGBT-related curricular content	
		Curricular material coverage required by accreditation bodies	
		Questions based on LGBT health/health disparities on national examinations	20 (40.0) at Ers 202 20 (40.0) to Ers 202 20 (40.0)
		More time in the curriculum to be able to teach LGBT-related content	
		Curricular material focusing on LGBT-related health/health disparities	<u> 16 (32.0) </u>
		Increased financial resources	10 (20.0) na stad
		More evidence-based research regarding LGBT health/health disparities	16 (32.0) Thomas 10 (20.0) and school 8 (16.0) tata 6 (12.0) minini
		Logistical support for teaching LGBT-related curricular content	6 (12.0) m i o
		Methods to evaluate LGBT curricular content	6 (12.0) mini on http://dom 6 (12.0) 9 9 (18.0) It rain
		Don't know	6 (12.0) 9 (18.0) 3 (6.0) 9 (18.0) 10 training ope
		Other	3 (6.0) nig
	89 90 91	* To focus on what would help in future, we specifically asked about future strate. These items were taken from question 13 from the questionnaire by Obedin-Mali	a <u>2</u> ,
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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).

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198	Table 3. Responses to our original question (N = 59)			en-202 ght, in		
	Were/are there	Yes	No	Dan'toknow	Declined to answer	- r -
	Any students who had come out as LGBT?	23 (39.0%)	10 (17.0%)	26 (39.9%)	6 (10.2%)	
	Any faculty members who had come out as LGBT?	7 (11.9%)	11 (18.6%)	3 g (6 a .7%)	4 (6.8%)	
	Faculty members interested in education on LGBT content?	27 (45.8%)	1 (1.7%)	3 a (58.9%)	1 (1.7%)	_
	Faculty members interested in education on LGBT content?	11		Map 2022. Downloaded from http://bmjopen.bmj.com/ on June 7, 2025 at Department GEZ-LTA Etasmushogeschool . Tretated to text and data mining, Al training, and similar technologies.		

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4 5	200	Comparison between Japan, the US/Canada and Australia/New Zealand
6 7	201	Only nine of 132 schools (6.8%) in the US and Canada did not include LGBT content in
8	202	preclinical training. The proportion of schools not teaching it in Japan (18 of 59 schools, 30.5%)
9 10	203	was therefore much higher (Fisher's exact test, $p < 0.01$) (Figure 3). Even if all the schools that
11	204	responded 'not known' had provided education on LGBT content during preclinical training in
12 13	205	Japan, the proportion of schools not teaching about LGBT content would still be significantly
14	206	higher in Japan than the US and Canada (Fisher's exact test, $p < 0.01$). In the US and Canada, 44
15 16	207	of 132 schools (33.3%) did not include LGBT content during clinical training, which was
17	208	significantly less than in Japan (25 of 53 schools, 47.2%) (Fisher's exact test, p < 0.01) (Figure
18 19	209	3). There were also significant differences in both pre-clinical and clinical training when schools
20	210	that answered "don't know" were excluded (Fisher's exact test, $p < 0.01$).
21 22	211	In the US and Canada, the median time (25th–75th percentile) spent on LGBT content during
23	212	preclinical and clinical training was 4 (2–6) and 2 (0–3) hours, longer than the 1 (0–2) and zero
24 25	213	(0–0) hours in Japan.
26 27	214	We were unable to compare our data with Australia and New Zealand, because there was no
27	215	information about how many schools there did not teach about LGBT content and the median
29 30	216	hours were not shown. ¹⁴
31	217	The detailed comparison between Japan, the US/Canada and Australia/New Zealand is shown
32 33	218	in Table 4. There were too few data from Australia and New Zealand for detailed statistical
34	219	comparisons.
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					соруг					
221	Table 4. Comparison of education on LGBT content bet	tween Japan, the C	JS and (Canada, and	ght in	5	ew Zealand			
				pan		: Canada	4	ustral	ia and New caland	
	No. of responders/total no. of schools (proportion)		59/82	2 (72%)	132/17	6 (75%)		15/2	1 (71%)	
	Methods of teaching LGBT content				Z	er (propo				
	LODTiffe content in the required prealinical ourriculum!	interspersed	19	(32.8%)	ay ∠u Eras ≥læe	(66.7%)	*	9	(60.0%)	
	LGBT-specific content in the required preclinical curriculum [†]	discrete modules	11	(19.0%)	d 20 sinus	(66.7%) (24.2%)		5	(33.3%)	
	Lectures or small-group sessions in the required clinical curriculum	m‡	12	(20.3%)	shog Refer	(59.8%) (5.3%)		2/1"	(13.3%/6.6%)	
	Clinical clerkship site that is specifically designed to	required clerkship	0	(0.0%)	and	(5.3%)		5¶¶	(33.3%)	
	facilitate LGBT patient care [§]	elective clerkship	0	(0.0%)	ueo lool d휦ta	(9.1%)	**	7¶¶	(46.6%)	
	Faculty development for teaching about LGBT health		5	(8.5%)		(20.5%)		0	(0.0%)	
	Coverage of LGBT content	10				er (propo	ortion)			
	Asking about same-sex relations when obtaining sexual history [¶]	C/.	13	(22.0%)	123	(97.0%)	*	12	(80.0%)	
	Teaching difference between behavior and identity ^{††}	10	17	(28.8%)	AXtraibinga	(72.0%)	*	10	(66.7%)	
	At least half of 16 LGBT-related topics covered in elective or requi	lired curriculum ^{‡‡}	15	(29.4%)	log al	(75.0%)	*	-	-	
	Evaluation of coverage of LGBT content (very poor/poor)§§		45	(79.0%)	nđ‡si	(25.8%)	*	3	(20.0%)	
222 223 224 225 226 227										
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Discussion Discussion This survey was the first attempt to compare education about LGBT content in medical schools in Japan with other countries. A much higher properties of schools did not teach about LGPT.

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

1 2		
3 4 5	260	possible that staff or students coming out may be considered a single case, not a common issue,
	261	and therefore not result in changes in educational policy in the school.
6 7	262	The reasons why LGBT-related education in Japan is so much worse in both quantity and
8	263	quality may be both socio-cultural and medical-educational. Socio-culturally, there are no anti-
9 10 11 12 13	264	discrimination laws regarding sexual orientation or gender identity, and same-sex marriages have
	265	not been approved in Japan. Cultures and social systems that protect the rights of LGBT people
	266	may therefore be less mature in Japan. This could make it difficult for LGBT people to come out.
14	267	In medical settings, 58% of LGBT people who accessed medical services for mental health
15 16	268	issues did not disclose their sexual orientation or gender identity to staff. ¹⁸ It may therefore be
17	269	hard for healthcare professionals to identify LGBT patients as such. Yamazaki et al reported that
18 19	270	the most common reason for not teaching LGBT content in Japanese medical schools was
20	271	unavailability of suitable instructors. ¹² In our study, the most popular future strategy for
21 22	272	increasing the time on LGBT content was "Faculty willing and able to teach LGBT-related
23	273	curricular content". We found that schools with faculty members interested in education on
24 25	274	LGBT content were more likely to cover this topic. We therefore believe it is essential to provide
26	275	more opportunities for faculty members to acquire the skills to teach about LGBT issues.
27 28	276	The inadequacy of medical education probably reflects the current state of medical practice in
29	277	Japan. To reduce health disparities among LGBT people, it is necessary to examine whether
30 31	278	LGBT people are being properly cared for in medical settings in countries where LGBT is
32	279	invisible, such as Japan, as well as improving medical education.
33 34		
35 36	280	Limitations
30 37	281	This study had some limitations. First, a high response rate was considered essential to enable
38 39	282	comparisons with previous studies, so we actively followed up questionnaires, which increased
39 40	283	the response rate from 47.6% after the first mail. However, the final response rate was just 73.2%
41 42	284	(60 of 82 schools) which was lower than the 85.2% (150 of 176 schools) in the US and Canada. ¹³
42 43	285	The results should therefore be interpreted with caution.
44 45	286	Second, we calculated the proportion of schools for each question excluding missing values.
45 46	287	The studies in the US and Canada ¹³ and in Australia and New Zealand ¹⁴ both used list-wise case
47	288	deletion. Using this method, the proportion of schools including LGBT content in preclinical and
48 49	289	clinical training decreased from 52.5% (31 of 59 schools) and 15.1% (eight of 53 schools) to
50	290	35.7% (15 of 42 schools) and 11.9% (five of 42), an even bigger difference with the US and
51 52 53	291	Canada. The median (25th–75th percentile) and mean (\pm SD) time were one (0–1.2) hour and 1.4

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3	292	(± 2.5) hours during preclinical training, and zero (0–0) hours and 0.25 (± 0.6) hours during
4 5	293	clinical training, which were very similar to our previous figures.
6	294	Third, there were some double answers for one question. This may be because the questionnaire
7 8	295	had been given to individual departments rather than a key faculty member aware of the overall
9	296	education curriculum. It is therefore not clear whether the responses accurately reflected the
10 11	297	current situation. However, this confusion probably reflects a lack of coordinated training on
12	298	LGBT content.
13 14	299	Conclusions
15	300	The median time given to LGBT content during preclinical training was one hour, and 30.5% of
16 17	301	respondents did not include any time. During clinical training, the median time was zero hours,
18	302	only 15.1% of respondents included dedicated time and 47.2% did not cover it at all. The
19 20	303	coverage of LGBT topics in medical education was much lower in Japan than in the US/Canada
21	304	and Australia/New Zealand. To promote education about LGBT content, it is necessary to train
22 23	305	faculty members to be able to teach these topics.
24		
25 26	306	Acknowledgements
27	307	The authors would like to thank Professor Osamu Fukushima for his help in distributing our
28 29	308	questionnaire. We also thank Ms. Chikako Mori, the clerk in our division, for her support, and
30	309	Melissa Leffler, MBA, from Edanz (https://jp.edanz.com/ac) for editing a draft of this
31 32	310	manuscript.
33		
34 35	311	Figure Legends
36	312	Figure 1. The flowchart of respondent selection
37 38	313	Figure 2. Hours dedicated to teaching LGBT content in Japanese medical schools
39	314	Footnote: *The numbers after the decimal point were rounded up.
40 41	315	Figure 3. Proportion of schools that did not teach about LGBT content at all
42	316	
43 44		
45	317	Footnotes
46 47	318	Author Contributors
48	319	EY designed the study, was primarily responsible for data collection, data analysis, interpretation
49 50	320	and drafted the manuscript. MM designed the study, contributed to the interpretation of data, and
51	321	reviewed the manuscript. FO interpreted the results and reviewed the manuscript. All co-authors
52 53	322	reviewed and approved the article prior to submission.
54	323	Funding
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1 2		
3	324	This study was supported by the Jikei University Research Fund for Graduate Students (grant
4 5	325	number: N/A).
6 7	326	Disclaimer
8	327	The sponsor of this study had no role in the study design; the study conduct including collection,
9 10	328	analysis, or interpretation of the data; the manuscript preparation; or the decision to submit the
11	329	manuscript for publication.
12 13	330	Competing interests
14	331	MM received lecture fees and lecture travel fees from the Centre for Family Medicine
15 16	332	Development of the Japanese Health and Welfare Co-operative Federation. MM is an adviser of
17	333	the Centre for Family Medicine Development practice-based research network, and a Program
18 19	334	Director of the Jikei Clinical Research Program for Primary Care. MM's son-in-law works at
20	335	IQVIA Services Japan K.K., which is a contract research organization and a contract sales
21 22	336	organization. EY is a former trainee of the Jikei Clinical Research Program for Primary Care.
22	337	Ethics approval
24 25	338	Patient consent for publication
26	339	Not required.
27 28	340	Ethics approval
29	341	The study was approved by the ethics committee of the Jikei University School of Medicine for
30 31	342	Biomedical Research (ref no. 30-042(9063)).
32	343	Data sharing statement
33 34	344	Data sharing statement No additional data are available.
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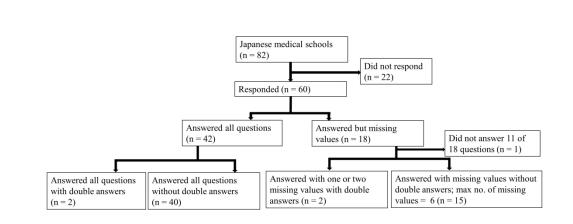


Figure 1. The flowchart of respondent selection

232x92mm (600 x 600 DPI)

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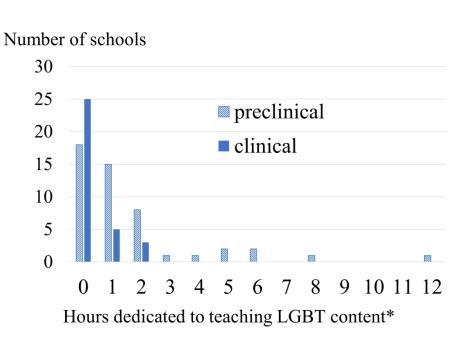
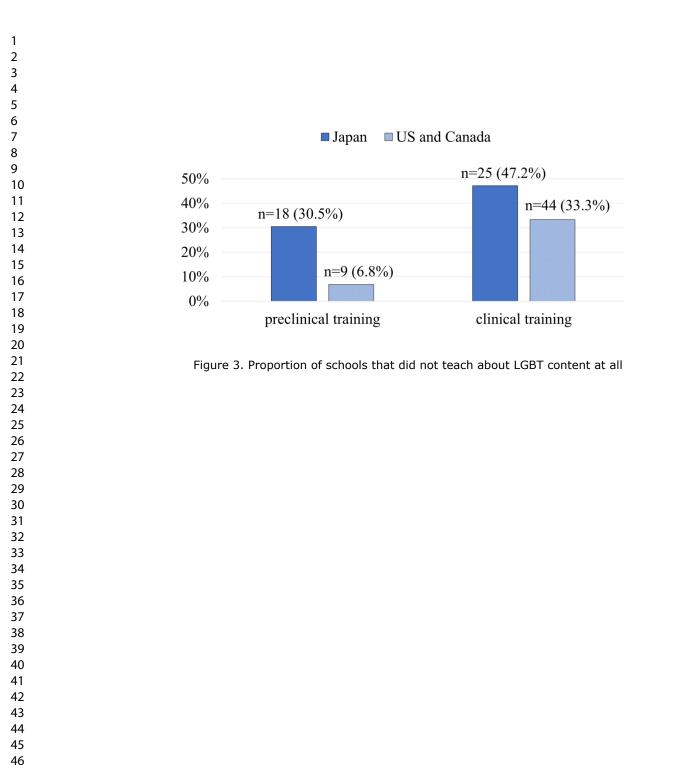


Figure 2. Hours dedicated to teaching LGBT content in Japanese medical schools



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STROBE Statement—Che	ecklist of items that shoul	d be included in reports	of <i>cross-sectional studies</i>

	Item No	Recommendation	Page No
Title and abstract	1	(<i>a</i>) Indicate the study's design with a commonly used term in the title or	2
		the abstract	2
		(<i>b</i>) Provide in the abstract an informative and balanced summary of what was done and what was found	2
		was done and what was found	
Introduction	2		4.5
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	5
-		recruitment, exposure, follow-up, and data collection	
Participants	6	(a) Give the eligibility criteria, and the sources and methods of selection	5
		of participants	
Variables	7	Clearly define all outcomes, exposures, predictors, potential confounders,	5
		and effect modifiers. Give diagnostic criteria, if applicable	
Data sources/	8*	For each variable of interest, give sources of data and details of methods	4-5
measurement		of assessment (measurement). Describe comparability of assessment	
		methods if there is more than one group	
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	6
		applicable, describe which groupings were chosen and why	
Statistical methods	12	(<i>a</i>) Describe all statistical methods, including those used to control for	6
		confounding	
		(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	N/A
		strategy	1.011
		(e) Describe any sensitivity analyses	12
Results			12
Participants	13*	(a) Report numbers of individuals at each stage of study—eg numbers	6
i unicipanto	15	potentially eligible, examined for eligibility, confirmed eligible, included	
		in the study, completing follow-up, and analysed	
		(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,	6
Descriptive duta	14	social) and information on exposures and potential confounders	
		(b) Indicate number of participants with missing data for each variable of	6-13
		interest	0-12
Outcome data	15*	Report numbers of outcome events or summary measures	6-13
Main results	15	(<i>a</i>) Give unadjusted estimates and, if applicable, confounder-adjusted	6-7
	10	estimates and their precision (eg, 95% confidence interval). Make clear	0-/
		estimates and then precision (eg. 3570 connuctive interval). Wake clear	1

		(b) Report category boundaries when continuous variables were	N
		categorized	
		(c) If relevant, consider translating estimates of relative risk into absolute	N
		risk for a meaningful time period	
Other analyses	17	Report other analyses done-eg analyses of subgroups and interactions,	10
		and sensitivity analyses	1
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	1:
		bias or imprecision. Discuss both direction and magnitude of any potential	1
		bias	
Interpretation	20	Give a cautious overall interpretation of results considering objectives,	14
		limitations, multiplicity of analyses, results from similar studies, and other	10
		relevant evidence	
Generalisability	21	Discuss the generalisability (external validity) of the study results	1:
Other information			
Funding	22	Give the source of funding and the role of the funders for the present study	10
		and, if applicable, for the original study on which the present article is	
		based	

*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

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Primary Subject Heading :	Medical education and training
Secondary Subject Heading:	Sexual health
Keywords:	MEDICAL EDUCATION & TRAINING, EPIDEMIOLOGY, SEXUAL MEDICINE





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2 3		
4	1	TITLE PAGE
5 6	2	Title
7 8	3	Cross-sectional survey of education on LGBT content in medical schools in Japan
9 10 11	4	
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50 51 52	23	Email address: yoshidayoyo@jikei.ac.jp
53	24	
54 55 56	25	Word Count: 4265 words
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1 2 3 4	26	Cross-sectional survey of education on LGBT content in medical schools in Japan
5 6 7	27	Abstract
8 9 10	28	Objectives: We aimed to clarify current teaching on LGBT content in Japanese
10	29	medical schools and compare it with data from the United States and Canada
12 13 14	30	reported in 2011 and Australia and New Zealand reported in 2017.
15 16	31	Design: Cross-sectional study.
17 18 19	32	Setting : Eighty-two medical schools in Japan.
20 21	33	Participants: The Deans and/or relevant faculty members of the medical schools in
22 23	34	Japan.
24 25	35	Primary outcome measure : Hours dedicated to teaching LGBT content in each medical
26 27	36	school.
28 29	37	Results: In total, 60 schools (73.2%) returned a questionnaire. One was excluded
30	38	because of missing values, leaving 59 responses (72.0%) for analysis. In total,
31 32	39	LGBT content was included in preclinical training in 31 of 59 schools and in
33 34	40	clinical training in eight of 53 schools. The proportion of schools that taught no
34 35	41	LGBT content in Japan was significantly higher than that in the US and Canada,
36 37	42	both in preclinical and clinical training ($p < 0.01$). The median time dedicated to
38	43	LGBT content was one hour (25th–75th percentile $0-2$ hours) during preclinical
39 40	44	training and zero hours during clinical training (25th–75th percentile 0–0 hour).
40 41	45	Only 13 schools (22%) taught students to ask about same-sex relations when
42 43	46	obtaining a sexual history. Biomedical topics were more likely to be taught than
43 44	47	social topics. In total, 45 of 57 schools (79%) evaluated their coverage of LGBT
45 46	48	content as poor or very poor, and 23 schools (39%) had some students who had
40 47	49	come out as LGBT. Schools with faculty members interested in education on
48 49 50	50	LGBT content were more likely to cover it.
51 52	51	Conclusion: Education on LGBT content in Japanese medical schools is less
53	52	established than in the US and Canada.
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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

2		
- 3 4	71	Introduction
5	72	Lesbian, gay, bisexual, transgender (LGBT) people are exposed to health inequities. These
6 7	73	health disparities are partly attributable to social discrimination. In Japan, no nationwide survey
8	74	of the size of the LGBT population has been undertaken by government. However, several
9 10	75	surveys have been conducted at the municipal level. A survey conducted in Osaka City, the third
11	76	largest city in Japan, revealed that 2.7% of respondents identified as LGBT. When individuals
12 13	77	who identified as asexual were included, the figure was 3.3%.1 Social discrimination and health
14	78	disparities against LGBT people have also been reported in Japan. 58% of LGBT people in have
15 16	79	been bullied in school, ² and 61.4% of transgender people have reported difficulties finding a job
17	80	because of their gender identity. ³ As for health disparities, for example, gay and bisexual men
18 19	81	have higher rate of attempted suicide than heterosexual men ⁴ and transgender people have high
20	82	rates of suicidal ideation. ⁵ Lesbian and bisexual women have high rates of self-harm. ⁶
21 22	83	Furthermore, in Japan, it has been reported that there are barriers for LGBT people to access
23	84	medical care, and that they are sometimes treated inappropriately in medical settings. More than
24 25	85	40% of transgender people reported that they had unpleasant experiences during medical visits or
26 27	86	hesitated to seek medical care.7 A survey of hospital nurse managers reported that more than
27	87	30% of hospitals allowed visitation and end-of-life care only to relatives, and partners of the
29 30	88	opposite sex, but not to partners of the same sex. ⁸
31	89	To eliminate these health disparities, healthcare providers should be equipped with better
32 33	90	knowledge, skills and attitudes. A systematic review reported that medical staff and students'
33 34	91	knowledge and attitude towards LGBT patients was improved by education.9 Education may
35 36	92	therefore be an important tool in improving medical care for LGBT patients. However, as shown
37	93	in this review, most of the reports on medical education about LGBT content are mainly from the
38 39	94	U.S., with limited reports from Asia. Understanding the cultural background is important in
40	95	developing medical education about LGBT content in East Asian countries, which have different
41 42	96	cultural backgrounds from the West.
43	97	In Japan, it has been suggested that there are few people who come out, making LGBT people
44 45	98	less visible. For example, in a survey of 16 countries conducted by Ipsos, 46% of respondents
46	99	answered that they had an LGBT person close to them, compared with only 5% of respondents in
47 48	100	Japan, the second lowest of the 16 countries. ¹⁰ Tamagawa also commented that "a number of
49	101	Japanese GLBT scholars and activists attest that it is extremely difficult, if not impossible, to
50 51	102	come out of the closet in Japanese society"(p488).11 In Japan, where LGBT people are thus less
52	103	visible, the revision of the model core curriculum for medical education for the 2016 academic
53 54	104	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 Canada¹⁴ and subsequently used in a study in Australia and New Zealand¹⁵ 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

1 2		
3	135	taught, the evaluation methods of LGBT-related learning, and strategies to increase time devoted
4 5	136	to education of LGBT content
6 7	137	
8 9 10	138	Data collection process
11	139	Data were collected between July 2018 and January 2019. If there was no response by the due
12 13	140	date, we mailed the questionnaire twice more and contacted the school by telephone.
14	141	If schools did not wish to participate, we asked them to return the blank questionnaire. To
15 16	142	confirm which universities had responded, the university name was included on the response
17 18 19	143	envelope. The divisional clerk, who was not involved in the research, opened the envelopes and
	144	kept the answer sheets separately. The name of the university therefore could not be linked to the
20	145	answers, and the completed questionnaires were treated as anonymous. The questionnaires
21 22	146	included details of these processes. The questionnaire included information about the purpose of
23	147	the study and how the answers would be used. Questionnaire completion was considered to show
24 25	148	consent to participate in the study.
26 27	149	
28 29 20	150	Data analysis
30 31	151	Each question was analyzed excluding missing values. We compared the proportions of medical
32 33	152	schools that taught each LGBT topic between Japan and the US and Canada ¹⁴ using Fisher's test.
33 34	153	This was also used to identify the statistical significance of the relationships between factors and
35 36	154	teaching on LGBT content in Japan. Wilcoxon's rank sum test was used to test the significance
36 37 38 39	155	of difference in hours spent teaching LGBT content between public and private/other schools.
	156	Testing excluded any answers indicating "declined to answer". All statistical analyses used Stata
39 40	157	ver16.0.
41 42 43	158	
44 45	159	Patient and public involvement
46 47 48	160	No patients involved.
49 50 51 52 53 54 55	161	Results
	162	In total, 60 of the 82 schools (73.2%) responded, and 42 answered all questions. Four schools
	163	provided double answers to one question. We removed one respondent that did not answer 11 of
56 57 58		6
59 60		For peer review only - http://bmjopen.bmj.com/site/about/guidelines.xhtml

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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 (\pm SD) hours of the 33 schools were zero (0–0) hour and 0.3 (\pm 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 (\pm SD) were zero (0-2) hours and $1.4 (\pm 2.4)$ 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

1 2		
- 3 4	195	schools that responded that it was taught in the required or elective curriculum and that it did not
4 5	196	need to be taught are summarized in Table 1.
6 7	197	In total, 37 respondents of 57 (64.9%) did not evaluate students' knowledge about LGBT
8	198	content. The most frequent form of evaluation was a written examination (16 of 57, 28.1%). No
9 10	199	schools used faculty-observed patient interactions or evaluation by patients, and only one used
11	200	peer-to-peer evaluations and evaluation by standardized patients. The free-text responses
12 13	201	included answers such as reaction papers, reports, presentations and oral examinations.
14	202	The strategies that could be used to increase training on LGBT content are shown in Table 2.
15 16	203	The most common was "Faculty willing and able to teach LGBT-related curricular content".
17		
18 19		
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21 22		
23 24		
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26 27		
28		The most common was "Faculty willing and able to teach LGBT-related curricular content".
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Disorders of Sex Development (DSD)/Intersex HIV in LGBT people Gender identity	elective curriculum (N = 51) 23 (45%) 20 (39%)	$\begin{array}{c} \mathbf{r} & \mathbf{r} & \mathbf{r} & \mathbf{r} \\ \mathbf{r} & \mathbf{r} & \mathbf{r} & \mathbf{r} \\ \mathbf{r} & \mathbf{r} & \mathbf{r} & \mathbf{r} \\ \mathbf{r} & \mathbf{r} & \mathbf{r} \\ \mathbf{r} & \mathbf{r} \\ \mathbf{r} & \mathbf{r} \end{array}$
HIV in LGBT people	· · · ·	
	20 (39%)	
Gandar idantity	()	elate 2 (4%)
	19 (37%)	
Sexual orientation	17 (33%)	text
Coming out	16 (31%)	and 6 (11%)
Transitioning	16 (31%)	data 3 (6%)
Sex reassignment surgery (SRS)	16 (31%)	
Sexually transmitted infections (not HIV) in LGBT people	15 (29%)	ing 2 (4%)
Barriers to accessing medical care for LGBT people	14 (27%)	Alt 5 (9%)
Mental health in LGBT people	14 (27%)	Al 5 (9%) nining 5 (9%) ng, 5 (9%)
LGBT adolescent health	7 (14%)	ig , b , 5 (9%)
Body image in LGBT people	7 (14%)	and j. 6 (11%)
Alcohol, tobacco, or other drug use among LGBT people	5 (10%)	S D D D D D D D D D D
Chronic disease risk for LGBT populations	5 (10%)	arte 2 (8%)
Safer sex for LGBT people	4 (8%)	te 5 4 (8%)
Unhealthy relationships among LGBT people	0 (0%)	logies. 25

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Page 11 of 28	BMJ Open		10.1136/bmjope cted by copyrig	
1 2 3 4 208 5	Table 2. Possible strategies to increase LGBT-specific content* (N = 50)		10.1136/bmjopen-2021-05 cted by copyright, includ	
6 7		No. of respondents (<u> </u>	
8 9	Faculty willing and able to teach LGBT-related curricular content	29 (58.0)	on 1 br us	5
9 10	Curricular material coverage required by accreditation bodies	24 (48.0)	les ro	
11 12	Questions based on LGBT health/health disparities on national examinations	20 (40.0)	ay 20 Eras elate	
13	More time in the curriculum to be able to teach LGBT-related content	20 (40.0)	2022. [asmus ited to to	5
14 15	Curricular material focusing on LGBT-related health/health disparities	16 (32.0)	hog text a	
16 17	Increased financial resources	10 (20.0)	and o	-
18	More evidence-based research regarding LGBT health/health disparities	8 (16.0)	ool data	
19 20	Logistical support for teaching LGBT-related curricular content	6 (12.0)	t mini	
21	Methods to evaluate LGBT curricular content	6 (12.0)	ng, A	
22 23	Don't know	9 (18.0)	//bm	
24	Other	3 (6.0)	<mark>jope</mark> ining	
25 26 209	* To focus on what would help in future, we specifically asked about future strates	gies rather than curren	ntguce	ess strategies.
27 210 28 211 30 31 32 33 34 35 36 37 38	These items were taken from question 13 from the questionnaire by Obedin-Maliv	rer et al. ¹⁴	ij.com/ on June 7, 2025 at Departn d similar technologies.	4 2
 39 40 41 42 43 44 45 46 	10 For peer review only - http://bmjopen.bmj.com/site/ab	oout/guidelines.xhtml	25 at Department GEZ-LTA ୬s.	

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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

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test, p < 0.01).

	13 of 28	BM	U Open		10.1136/bmjopen-202 cted by copyright, in	
1 2 3 4	218	Table 3. Responses to our original question (N = 59)			n-20 Iht, ii	
5 6		Were/are there	Yes	No	Dan'texnow	Declined to answer
7 8		Any students who had come out as LGBT?	23 (39.0%)	10 (17.0%)	2 පු (3පු.9%)	6 (10.2%)
9		Any faculty members who had come out as LGBT?	7 (11.9%)	11 (18.6%)	<u> </u>	4 (6.8%)
10 11 12		Faculty members interested in education on LGBT content?	27 (45.8%)	1 (1.7%)	3 3 3 4 5 5 7 5 7 8 9%)	1 (1.7%)
$\begin{array}{c} 13\\ 14\\ 15\\ 16\\ 17\\ 18\\ 19\\ 20\\ 21\\ 22\\ 23\\ 24\\ 25\\ 26\\ 27\\ 28\\ 29\\ 30\\ 31\\ 32\\ 33\\ 34\\ 35\\ 36\\ 37\\ 38\\ 39\\ 40\\ 41\\ 42\\ 43\\ 44\\ 45\\ 46\\ 47\\ \end{array}$	219	Any faculty members who had come out as LGBT? Faculty members interested in education on LGBT content?	12		17%) Ma@2022. Downloaded from http://bmjopen.bmj.com/ on June 7, 2025 at Department GEZ-LTA Etasmushogeschool . Bas retasted to text and data mining, Al training, and similar technologies.	

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5	220	Comparison between Japan, the US/Canada and Australia/New Zealand
6 7	221	Only nine of 132 schools (6.8%) in the US and Canada did not include LGBT content in
8	222	preclinical training. ¹⁴ The proportion of schools not teaching it in Japan (18 of 59 schools,
9 10	223	30.5%) was therefore much higher (Fisher's exact test, $p < 0.01$) (Figure 3). Even if all the
11 12	224	schools that responded 'not known' had provided education on LGBT content during preclinical
12	225	training in Japan, the proportion of schools not teaching about LGBT content would still be
14 15	226	significantly higher in Japan than the US and Canada (Fisher's exact test, $p < 0.01$). In the US
16	227	and Canada, 44 of 132 schools (33.3%) did not include LGBT content during clinical training, ¹⁴
17 18	228	which was significantly less than in Japan (25 of 53 schools, 47.2%) (Fisher's exact test, p $<$
19	229	0.01) (Figure 3). There were also significant differences in both pre-clinical and clinical training
20 21	230	when schools that answered "don't know" were excluded (Fisher's exact test, $p < 0.01$). We were
22	231	unable to statistically compare our data with Australia and New Zealand, because there was no
23 24	232	information about how many schools there did not teach about LGBT content. ¹⁵
25	233	In the US and Canada, the median time (25th–75th percentile) spent on LGBT content during
26 27	234	preclinical and clinical training was 4 (2–6) and 2 (0–3) hours, ¹⁴ longer than the 1 (0–2) and zero
28	235	(0–0) hours in Japan. The study in Australia and New Zealand did not provide the median hours.
29 30	236	15
31	237	The detailed comparison between Japan, the US/Canada ¹⁴ and Australia/New Zealand ¹⁵ is shown
32 33	238	in Table 4. There were too few data from Australia and New Zealand for detailed statistical
34	239	comparisons.
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1 2 3	240	Table 4. Commention of advantion on LCDT contant bat	tores tores the l	Te and	Carada and	ght	ř	7 aal		
4 5 6 7	240	Table 4. Comparison of education on LGBT content bet	ween Japan, me c		canada, and pan		band N b Canada		Austral	ia and New aland ¹⁵
8		No. of responders/total no. of schools (proportion)		59/82	(72%)	132/17	<u>ຜ</u> 26 (75%)			1 (71%)
9 10		Methods of teaching LGBT content				<u> </u>	er (prop	ortion)		× ,
11			interspersed	19	(32.8%)				9	(60.0%)
12 13		LGBT-specific content in the required preclinical curriculum [†]	discrete modules	11	(19.0%)	smu:	(66.7%) (24.2%)		5	(33.3%)
14 15		Lectures or small-group sessions in the required clinical curriculum	n‡	12	(20.3%)	sho Ang	\$ (59.8%)	*	2/1	(13.3%/6.6%)
16		Clinical clerkship site that is specifically designed to	required clerkship	0	(0.0%)	đö	0.570)		5¶¶	(33.3%)
17 18		facilitate LGBT patient care§	elective clerkship	0	(0.0%)	100l	ded (9.1%)	**	7¶¶	(46.6%)
19		Faculty development for teaching about LGBT health	4	5	(8.5%)		(20.5%)		0	(0.0%)
20 21		Coverage of LGBT content	10				er (prop			
22		Asking about same-sex relations when obtaining sexual history [¶]	C	13	(22.0%)	12 4	(97.0%)		12	(80.0%)
23 24		Teaching difference between behavior and identity ^{††}		17	(28.8%)	aibjin	(72.0%)	*	10	(66.7%)
25 26		At least half of 16 LGBT-related topics covered in elective or requ	ired curriculum ^{‡‡}	15	(29.4%)	ng Ba	(75.0%)	*	-	-
27		Evaluation of coverage of LGBT content (very poor/poor) ^{§§}		45	(79.0%)	nđ‡si	(25.8%)	*	3	(20.0%)
28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43	241 242 243 244 245 246	* P value < 0.01, ** P value < 0.05 for comparison of the proportion Number answering "Do not know"/ missing value among Japane "Two schools had lectures and one had small-group sessions. Sat "Two schools had clinical rotation site as a required clinical rota Items on methods of teaching LGBT content and coverage of LCC of the questionnaire by Obedin-Maliver et al. ¹⁴	ese responses: [†] 3/1, [‡] 1 inchez AA et al aske ation, four as an electi	1/0, [§] 0/0 ed separ ive and th	, ¹ 4/0, [¶] 17/0, ^{††} ately about le hree as both. ¹⁵	10/0, 10/8 ectures and ng to concern	S ^{§§} 3/2 small-g	group ses		
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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

1 2		
3	280	medical education from the Association of American Medical Colleges (AAMC) summarized
4 5	281	the health disparities of individuals who are LGBT, gender nonconforming, or born with DSD,
6 7	282	including social issues, and provided professional competency objectives to improve health care
7 8	283	for those people. ¹⁸
9	284	Additional questions in our survey were designed to explore the factors that promote LGBT
10 11	285	education. A study in the U.S. and Canada found that East Asian medical students were less
12	286	likely to come out about their sexual identity than white students, ¹⁹ so we assumed that sexuality
13 14	287	would also tend to be hidden in medical schools in Japan as well. We hypothesized that openly
15	288	LGBT students or staff might stimulate interest. Of respondent schools, 39% had students who
16 17	289	had come out as LGBT, which was more than we expected. However, we found no relationship
18 19	290	between teaching time and whether there were LGBT staff or students who came out. It is
19 20	291	possible that staff or students coming out may be considered a single case, not a common issue,
21 22	292	and therefore not result in changes in educational policy in the school.
22	293	The reasons why LGBT-related education in Japan is so much worse in both quantity and
24 25	294	quality may be both socio-cultural and medical-educational. Socio-culturally, there are no anti-
25 26	295	discrimination laws regarding sexual orientation or gender identity, and same-sex marriages have
27 28 29 30 31 32 33 34 35	296	not been approved in Japan. Cultures and social systems that protect the rights of LGBT people
	297	may therefore be less mature in Japan. This could make it difficult for LGBT people to come out.
	298	In medical settings, 58% of LGBT people who accessed medical services for mental health
	299	issues did not disclose their sexual orientation or gender identity to staff. ²⁰ It may therefore be
	300	hard for healthcare professionals to identify LGBT patients as such. However, the movement for
	301	the rights of LGBT people in Japan is slowly making progress. For example, there is a growing
36 37	302	movement at the local government level to issue certificates for same-sex partnerships. Medical
38	303	institutions are also beginning to provide support for LGBT people. For example, Juntendo
39 40	304	University Hospital in Tokyo established a working group in 2021 to consider and respond to
41	305	patients, families and staff regarding sexual orientation and gender identity, and has started
42 43	306	activities such as providing learning opportunities for medical staff and a sexual orientation and
44	307	gender identity consultation service. ²¹
45 46	308	From a medical education perspective, Yamazaki et al reported that the most common reason
47	309	for not teaching LGBT content in Japanese medical schools was unavailability of suitable
48 49	310	instructors. ¹³ In our study, the most popular future strategy for increasing the time on LGBT
50	311	content was "Faculty willing and able to teach LGBT-related curricular content". We found that
51 52	312	schools with faculty members interested in education on LGBT content were more likely to
53	313	cover this topic. We therefore believe it is essential to provide more opportunities for faculty
54 55	314	members to acquire the skills to teach about LGBT issues. Yamazaki et al. recommended the
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5 following six steps to promote medical education on SGM: engaging appropriate stakeholders, 6 developing a textbook or educational guide for SGM education, and developing a diverse 7 curriculum team for each medical school, as well as conducting faculty development, curriculum 8 development, and curriculum evaluation.¹³ We believe that all of these steps are necessary in 9 Japan. Our study highlighted the importance of the third step "diverse curriculum team for each 0 medical school" and the fourth step "conducting faculty development". In Japan, although 1 workshops have been held to devise and implement education about LGBT content in medical 2 education courses, such meetings are not conducted on a continuous basis. Accessible online 3 courses could potentially provide valuable opportunities for more educators in Japan to learn 4 about teaching LGBT content, such as those offered by Stanford Medicine.²² The current results 5 also revealed that one school in Japan had made outstanding progress, spending 12 hours on 6 LGBT education. It would be useful to share information about how this school started and 7 evolved their teaching, so that schools who are not currently teaching LGBT content at all can 8 start teaching it. There is also an urgent need in Japan to develop guidelines for medical 9 education on LGBT content. In addition to education provided by each medical school, internet 0 resources such as AAMC material can be used to provide opportunities for all medical students 1 in Japan to learn LGBT content.²³ 2 To the best of our knowledge, no previous survey has examined the current status of post-

3 graduate education for physicians on LGBT issues in Japan. Although a small number of lectures 4 and workshops have recently been held in the level of academic society,^{24,25} the opportunities for 5 physicians to learn about LGBT content after graduation are still limited. Therefore, it is 6 important to provide opportunities for education on LGBT content in undergraduate education. 7 The inadequacy of medical education probably reflects the current state of medical practice in 8 Japan. To reduce health disparities among LGBT people, it is necessary to examine whether 9 LGBT people are being properly cared for in medical settings in countries where LGBT is 0 invisible, such as Japan, as well as improving medical education.

a 341 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.

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5 4	347	Second, we calculated the proportion of schools for each question excluding missing values.
5	348	The studies in the US and Canada ¹⁴ and in Australia and New Zealand ¹⁵ both used list-wise case
6 7	349	deletion. Using this method, the proportion of schools including LGBT content in preclinical and
8	350	clinical training decreased from 52.5% (31 of 59 schools) and 15.1% (eight of 53 schools) to
9 10	351	35.7% (15 of 42 schools) and 11.9% (five of 42), an even bigger difference with the US and
11	352	Canada. The median (25th–75th percentile) and mean (\pm SD) time were one (0–1.2) hour and 1.4
12 13	353	(\pm 2.5) hours during preclinical training, and zero (0–0) hours and 0.25 (\pm 0.6) hours during
14	354	clinical training, which were very similar to our previous figures.
15 16	355	Third, there were some double answers for one question. This may be because the questionnaire
17	356	had been given to individual departments rather than a key faculty member aware of the overall
18 19	357	education curriculum. It is therefore not clear whether the responses accurately reflected the
20	358	current situation. However, this confusion probably reflects a lack of coordinated training on
21 22	359	LGBT content.
23	360	Fourth, the survey in the US and Canada used as a comparison were conducted in 2009–2010, ¹⁴
24 25	361	approximately nine years before the current study. In 2014, after this study was conducted, the
26	362	AAMC published practical, detailed and evidence-based recommendation for educational
27 28	363	curricula on LGBT content. ¹⁸ Furthermore, in 2015, same-sex marriage was legalized across the
29	364	US. Over the past ten years, various attempts and advances in medical education on LGBT
30 31	365	content have been reported from the US and Canada. ^{26,27} Considering these developments, the
32	366	gap between Japan and the US and Canada may currently be expanding.
33 34	367	
35	368	Conclusions
36 37	369	The median time given to LGBT content during preclinical training was one hour, and 30.5% of
38	370	respondents did not include any time. During clinical training, the median time was zero hours,
39 40	371	only 15.1% of respondents included dedicated time and 47.2% did not cover it at all. The
41	372	coverage of LGBT topics in medical education was much lower in Japan than in the US/Canada
42 43	373	and Australia/New Zealand. To promote education about LGBT content, it is necessary to train
44	374	faculty members to be able to teach these topics.
45 46	375	Data sharing statement
47	376	No additional data are available.
48 49	377	Ethics statements
50	378	Patient consent for publication
51 52	379	Not required.
53	380	Ethics approval
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382	Biomedical Research (ref no. 30-042(9063)).
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387	editing a draft of this manuscript.
388	Figure Legends
389	Figure 1. The flowchart of respondent selection
390	Figure 2. Hours dedicated to teaching LGBT content in Japanese medical schools
391	Footnote: *The numbers after the decimal point were rounded up.
392	Figure 3. Proportion of schools that did not teach about LGBT content at all
393	Footnote: The data of the US and Canada was quoted from Obedin-Maliver et al. ¹⁴
394	
395	Footnotes
396	Author Contributors
397	EY designed the study, was primarily responsible for data collection, data analysis, interpretation
398	and drafted the manuscript. MM designed the study, contributed to the interpretation of data, and
399	reviewed the manuscript. FO interpreted the results and reviewed the manuscript. All co-authors
400	reviewed and approved the article prior to submission.
401	Funding
402	This study was supported by the Jikei University Research Fund for Graduate Students (grant
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404	Disclaimer
405	The sponsor of this study had no role in the study design; the study conduct including collection,
406	analysis, or interpretation of the data; the manuscript preparation; or the decision to submit the
407	manuscript for publication.
408	Competing interests
409	MM received lecture fees and lecture travel fees from the Centre for Family Medicine
410	Development of the Japanese Health and Welfare Co-operative Federation. MM is an adviser of
411	the Centre for Family Medicine Development Practice-Based Research Network, and a program
	19
	 382 383 384 385 386 387 388 389 390 391 392 393 394 395 396 397 398 399 400 401 402 403 404 405 406 407 408 409 410

5 413 6 414 8 415 9 416 11 417 12 13 14 15 16 17 18 19 20 21 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54	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 traince of the Jikei Clinical Research Program for Primary Care.
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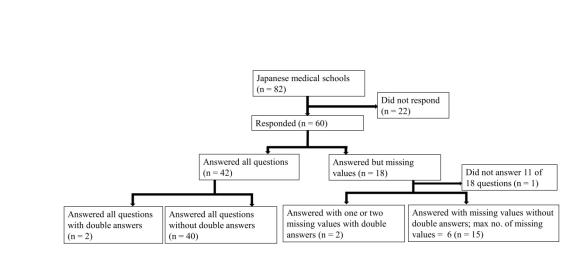


Figure 1. The flowchart of respondent selection

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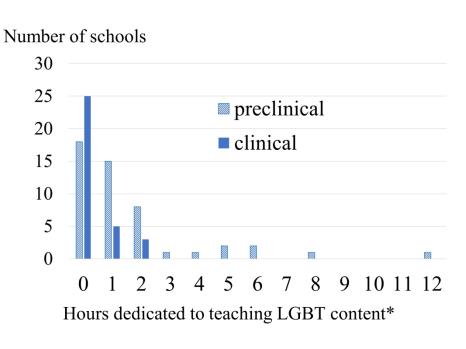
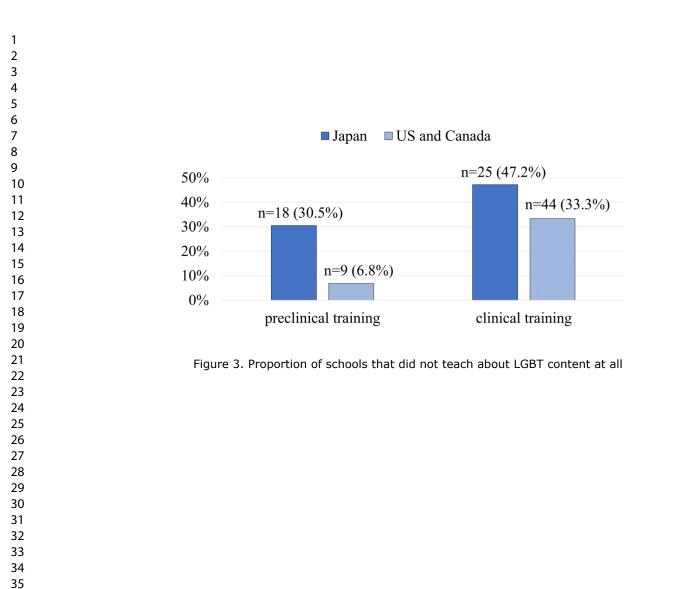


Figure 2. Hours dedicated to teaching LGBT content in Japanese medical schools



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

	Item No	Recommendation	Page No
Title and abstract	1	(<i>a</i>) Indicate the study's design with a commonly used term in the title or	2
		the abstract	2
		(<i>b</i>) Provide in the abstract an informative and balanced summary of what was done and what was found	2
		was done and what was found	
Introduction	2		4.5
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	5
-		recruitment, exposure, follow-up, and data collection	
Participants	6	(a) Give the eligibility criteria, and the sources and methods of selection	5
		of participants	
Variables	7	Clearly define all outcomes, exposures, predictors, potential confounders,	5
		and effect modifiers. Give diagnostic criteria, if applicable	
Data sources/	8*	For each variable of interest, give sources of data and details of methods	4-5
measurement		of assessment (measurement). Describe comparability of assessment	
		methods if there is more than one group	
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	6
Quantitative variables		applicable, describe which groupings were chosen and why	
Statistical methods	12	(<i>a</i>) Describe all statistical methods, including those used to control for	6
		confounding	
		(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	N/A
		strategy	
		(e) Describe any sensitivity analyses	12
Results			1
Participants	13*	(a) Report numbers of individuals at each stage of study—eg numbers	6
	10	potentially eligible, examined for eligibility, confirmed eligible, included	
		in the study, completing follow-up, and analysed	
		(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,	6
		social) and information on exposures and potential confounders	
		(b) Indicate number of participants with missing data for each variable of	6-13
		interest	
Outcome data	15*	Report numbers of outcome events or summary measures	6-13
Main results	16	(<i>a</i>) Give unadjusted estimates and, if applicable, confounder-adjusted	6-7
1111111100110	10	estimates and their precision (eg, 95% confidence interval). Make clear	0-7
		estimates and then precision (eg, 2270 confidence interval). Make clear	1

		(b) Report category boundaries when continuous variables were	N/2
		categorized	
		(c) If relevant, consider translating estimates of relative risk into absolute	N/2
		risk for a meaningful time period	
Other analyses	17	Report other analyses done-eg analyses of subgroups and interactions,	10
		and sensitivity analyses	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	15
		bias or imprecision. Discuss both direction and magnitude of any potential	16
		bias	
Interpretation	20	Give a cautious overall interpretation of results considering objectives,	14
		limitations, multiplicity of analyses, results from similar studies, and other	16
		relevant evidence	
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	16
		and, if applicable, for the original study on which the present article is	
		based	

*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.