

Predictors of LGBT Recognition by Health Sciences University Students in Japan

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Abstract

Background: This study aimed to identify the predictors of LGBT recognition by health sciences university students in Japan. **Methods:** This is a cross-sectional study that used quantitative data collected from 481 returned self-report questionnaires distributed to 866 health sciences undergraduate and graduate students. The following survey item and scales were used for measuring the main outcomes: *Thoughts about sexual identity*, *Empathy scale*, *Objectivity scale*, and *LGBT recognition scale*. Data were analyzed using descriptive statistics, two-sample t-test, one-way analysis of variance, and multiple regression analyses. SPSS ver. 23.0 (SPSS, Chicago, IL, USA) was used for data analysis at a 5% significance level. **Results:** The number of returned questionnaires was 481 (55.5%). There was no significant difference in the LGBT recognition and the participant's characteristics (e.g., age and medical history). The 5 significant predictors of LGBT recognition were: 1) *Empathy* ($\beta = 0.19$, $p < 0.001$); 2) *LGBT learning experience* ($\beta = 0.18$, $p < 0.001$); 3) *Objectivity* ($\beta = 0.15$, $p < 0.01$); 4) *Sexual problem with a close person* ($\beta = 0.13$, $p < 0.01$); and 5) *Suffering from gender identity* ($\beta = 0.09$, $p < 0.05$). **Conclusions:** The predictive factors of LGBT recognition were *Empathy*, *LGBT learning experience*, *Objectivity*, *Sexual problem with a close person*, and *Suffering from gender identity*. Careful development and implementation of LGBT educational programs are needed to better understand the situations and ideas of LGBT parties to enhance their recognition.

Keywords

Sexual and Gender Minorities, Recognition, Students, Health Occupations, Cross-Sectional Studies

1. Introduction

A survey conducted on general adults in Japan showed that the percentage of sexual minorities such as lesbian, gay, bisexual and transgender (LGBT) is only about 5.9% [1]. Bisexual orientation and transgender identity are usually hidden and are unlikely to be recognized unless openly confessed [2]. Recently in Japan, many LGBT parties and other organizations conduct various activities such as the Tokyo Rainbow Parade to overcome being unrecognized [1].

In 2015, the Shibuya ward in Tokyo established a regulation, issued partnership certificates, and introduced a system that makes same-sex couples equivalent to legal couples [1]. In the same year, the Japanese Ministry of Education, Culture, Sports, Science and Technology launched a program called “Implementation of Fine-grained Response to Children with Gender Identity Disorder”. The contents of the program included important response aspects for not only gender identity disorder but also homosexuals and bisexuals (LGBs) [1] [3].

With the development of such social phenomena, information on LGBT has been rapidly taken up in mass media. Among welfare students in Japan, the most frequent source of information on homosexuality was the television, followed by magazines and friends [4]. Most Japanese students obtain their information on LGBT from the television, although such information may possibly be biased. The mass media has unfortunately connoted the word “LGBT” with “not related to us” or “unfamiliar people” under the present circumstances [5]. Moreover, the sexual orientation of LGBs and the sexual identity disorder of transgenders (T) are not commonly distinguished in Japan [5]. Among the elementary and junior high school teachers involved in the education of children with gender identity disorders, the percentage of faculty who can clearly explain the difference between LGB and T is low at 31.6% [6]. Under such circumstances, it is considered difficult to educate students and increase their awareness of LGBT.

On the other hand, various LGBT parties in Japan are prone to develop self-hatred and loneliness because of the discriminative remarks and actions against LGBTs by people with a low recognition, making them suicidal high-risk groups because of their poor self-esteem [7] [8]. Furthermore, LGBT parties in Japan encounter various problems in their daily life. These include not having their own dedicated restrooms [9], limitations on the time to visit their same-sex partner during hospitalization and end-of-life stay [1], cannot become completely dependent of health insurance [1], and not being able to sign a consent form for emergency operation [10].

LGBT parties also suffer from the lack of response to and knowledge of their medical needs from medical professionals, creating a feeling of a barrier to receiving health support from medical institutions [11]. For the healthy development of LGBTs, there is a pressing need for additional medical curricula to clearly understand their background and medical needs [12]. Importantly, educational content related to the specific problems of youth LGBTs is obviously lacking in university educational programs [13]. Notably, significant gains in the

knowledge of and attitudes to LGBTs have been achieved by nursing students through educational programs about their nursing care [11]. Indeed, what is common between Japan and other countries is that LGBT parties experience real and various difficulties in life.

Medical professionals including nurses involved in healthcare need to recognize and understand various gender identities and respond appropriately to LGBT patients. In Japan, the fundamental problem is the lack of previous studies on LGBT recognition by healthcare professionals and medical healthcare students.

In this study, we evaluated Japanese medical healthcare students and clarified their current knowledge of LGBT recognition. Specifically, we aimed to identify the relevant factors for LGBT recognition by medical healthcare students.

2. Methods

2.1. Study Design

This study was a descriptive quantitative cross-sectional questionnaire survey.

2.2. Definition of Terms

LGBT: Lesbian, Gay, Bisexual, Transgender is a generic term for transgender, which represents sexual and gender minorities;

Lesbian: Homosexuality of women in which the physical gender and love subjects are women;

Gay: Homosexuality in men in which the physical gender and love subjects are men;

Bisexual: Encompasses cases where men or women may be the subject of romance;

Transgender: A person with sexual identity disorder or gender disagreement that does not conform to physical gender and psychological gender.

2.3. Conceptual Framework

We developed a conceptual framework according to the background of the medical healthcare students related to LGBT recognition. This conceptual framework encompasses different concepts and their relationships to LGBT recognition as follows: Personal characteristics, Thoughts about sexual identity, Empathy, and Objectivity (**Figure 1**).

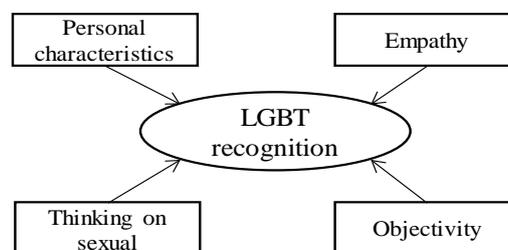


Figure 1. Conceptual framework of the study.

2.4. Participants and Setting

The participants were Japanese universities undergraduate and graduate students studying different fields of medical healthcare such as nursing, midwifery, nutrition, and medical information science. Data were collected by purposive sampling of the participants from a convenience sample of university students in the Kanto district of Japan in which the department head of the university agreed to cooperate with this study. The inclusion criteria were: 1) Undergraduate and graduate students studying medical healthcare, and 2) Could communicate in Japanese. The exclusion criterion was students with severe psychiatric disorders.

For multiple regression analysis, the sample size should be 10 times the number of parameters [14]. The sample size required for the present survey was calculated using the specification *10 times the number of parameters and a recovery rate of 40%* [15]. Therefore, the target sample size was set at 875 participants ($35 \text{ parameters} \times 10/0.4 = 875$).

2.5. Procedures

After obtaining permission from the department head of the university, verbal and written information regarding the research project was provided to the participants. Submission of the completed questionnaire was considered as indicating consent. Each participant was asked to return the completed questionnaire in a sealed envelope either by post or by placing it in a collection box at the entrance lobby of the university. During the study period from June 2018 to July 2018, 866 questionnaires were distributed to eligible participants. A total of 520 (60.6%) completed questionnaires were returned, of which 481 (55.5%) were suitable for analyses.

2.6. Ethical Considerations

The study was conducted after obtaining approval from the Ethics Committee for Epidemiological Studies at Tokyo Healthcare University (approval no. 30-6) dated 1 June, 2018. Following the Declaration of Helsinki, a written explanation regarding the study objectives, methods, protection of anonymity, and voluntary basis of participation was provided to each participant. The participants were also informed that the collected data would only be used for this study.

2.7. Survey Contents

2.7.1. Participants' Attributes

The attributes of the participants surveyed included Age, Student status, Diversity experience, Education in middle and high school, Significant medical history, and Gynecological history (**Table 1**).

2.7.2. Thoughts about Sexual Identity

The participants' thoughts about their sexual identity included the following: Sex on the family register, Gender identity, Suffering from gender identity, Sexual

Table 1. Demographic data of the participants (N = 481).

Participant's Characteristics and Thinking on Sexual	n	%
Age (Years)		
10s	215	44.7
20s	250	52.0
30s	11	2.3
over 40s	5	1.0
Student Status		
University Students	455	94.6
Graduate Students	26	5.4
Diversity Penetration		
Yes	124	25.8
No	67	13.9
Unknown	290	60.3
Education in Middle and High School		
Coeducation	376	78.2
Single-Sex	105	21.8
Significant Medical History		
Yes	140	29.1
No	334	69.4
No Response	7	1.5
Gynecological History		
Yes	54	11.2
No	380	79.2
Sexes on the Family Register		
Male	47	9.8
Female	434	90.2
Gender Identity		
Male	47	9.8
Female	434	90.2
Suffering of Gender Identity		
Yes	20	4.2
No	461	95.8
Sexual Problem in Close Person		
Yes	76	15.8
No	405	84.2
Experience of Confession from LGBT		
Yes	122	25.4
No	359	74.6
LGBT Learning Experience		
Yes	338	70.3
No	143	29.7

problem with a close person, Experience of confession as an LGBT, and LGBT learning experience (**Table 1**).

2.7.3. LGBT Recognition Scale (10 Items)

The survey items for measuring LGBT recognition were independently developed by the researchers based on previous studies on understanding and consciousness of LGBT [4] [5] [7] [9]. The 3 sub-scales of the LGBT recognition scale consisted of the Knowledge of LGBT, Understanding of LGBT, and Tolerance for LGBT. The original version of the LGBT recognition scale has a total of 10 items which are scored as follows: “Strongly Disagree” 1 point, “Disagree” 2 points, “Neutral” 3 points, “Agree” 4 points, and “Strongly Agree” 5 points. The score ranges from 10 to 50 points. The higher the score is, the higher the LGBT recognition. The reliability and validity of the LGBT recognition scale have been verified in this study. This scale was used to measure the level of LGBT recognition by the medical healthcare students.

2.7.4. Empathy Scale

For empathy measurements, *empathy*, a subscale of the multidimensional empathy scale, was used [16]. This scale has 5 items that are related to empathy to others, asking responses to each item, and then calculating the score. This scale measures the reaction tendency of cognitive and emotional responses to the psychological state of others in accordance with a multidimensional approach of empathy. The score ranges from 5 to 25 points. The higher the score is, the higher the empathy to others. The reliability and validity of the empathy scale have been confirmed by the developers, and the Cronbach’s α was 0.71 [16]. Factor analysis was conducted in this survey, and the scale score was calculated after reconfirming the reliability. In the present study, *empathy* was added to the survey items as it was expected to be related to LGBT recognition. Also, *empathy* was used to confirm the validity of the coexistence of the LGBT recognition scale.

2.7.5. Objectivity Scale

For the measurement of *objectivity*, we used an objectivity subscale of the Critical Thinking Attitude Scale [17]. This objectivity scale has 7 items related to objectivity, and 5 points are required for the answers to each item. The scores are then calculated and ranges from 7 to 35 points. A higher score indicates a more objective judgment and a more positive attitude about the position of others. The reliability and validity of this objectivity scale have been confirmed, and Cronbach’s $\alpha = 0.73$ has been reported [17]. In this survey, factor analysis was conducted and the scale score was calculated after reconfirming the reliability. Objectivity was predicted to be related to LGBT recognition, thus it was incorporated into the survey items. Also, *objectivity* was used to confirm the validity of the coexistence of the LGBT recognition scale.

2.8. Statistical Analysis

SPSS ver.23.0 (SPSS, Chicago, IL, USA) was used for data analyses. The signific-

ance level was set at 5%. The alpha coefficient and factor loadings were calculated to examine the reliability of the responses on each scale. The two-sample t-test, one-way analysis of variance (ANOVA), and stepwise multiple regression analysis were also used for data analyses. For the first step in the data analysis, the correlations between LGBT recognition and participants' characteristics were examined using the two-sample t-test and one-way ANOVA. For the second step, 10 variables were entered as independent variables to determine which variables affected LGBT recognition as dependent variables using stepwise multiple regression analysis.

3. Results

During the study period, 866 questionnaires were distributed to eligible participants. A total of 520 completed questionnaires (60.6%) were returned, of which 481 were suitable for analyses. Therefore, the response rate was 55.5%.

3.1. Participants' Characteristics

The characteristics of the participants are summarized in **Table 1**. There were 215 (44.7%) participants who were in their 10s and 250 (52.0%) participants who were in their 20s. There were 455 undergraduate students (94.6%) and 26 graduate students (5.4%). The family register indicated 47 men (9.8%) and 434 women (90.2%). There were 20 students (4.2%) who *suffered from gender identity*, and 76 students (15.8%) had *Sexual problem with a close person*. There were 122 students (25.4%) who had the *Experience of confession as an LGBT*, and 338 students (70.3%) had *LGBT learning experience*.

3.2. Reliability and Validity of the Scales

The factor structure was confirmed for each variable in the following 3 measures: *LGBT recognition*, *Empathy*, and *Objectivity*. The construct validity was confirmed by factor analysis using the maximum likelihood method and promax rotation. The results of the factor analysis yielded a factor loading of 0.36 or more for all the items, and the cumulative contribution rate was 34.2% or more for all the scales. The contribution rate of LGBT recognition scale was 64.1%. The reliability of the scales was confirmed using the Cronbach's α coefficient, which ranged from 0.75 to 0.84.

For concurrent validity, the relationships of the LGBT recognition scale score with the Empathy scale score and Objectivity scale score were examined by determining Pearson's product moment correlation coefficient. As shown in **Table 2**, the LGBT recognition scale score and Empathy scale score showed a positive significant correlation of $r = 0.268$ at the 1% level. The LGBT recognition scale score and Objectivity scale score also showed a positive significant correlation of $r = 0.265$ at the 1% level. Accordingly, reliability and validity were reconfirmed for *LGBT recognition*, *Empathy*, and *Objectivity*. The results are shown in **Table 3**. Based on the above validity and reliability examination, it was confirmed that

Table 2. Association of LGBT recognition scale with Empathy scale and Objectivity scale (N = 481).

	Empathy Scale Score		Objectivity Scale Score	
LGBT Recognition Scale Score	0.268	***	0.265	***

Pearson's product moment correlation coefficient ***p < 0.001.

Table 3. Descriptive statistics for each LGBT recognition scale (N = 481).

Scale	N	Mean	SD	Number of Items	Factor Loadings	Cumulative Contribution Ratio	Cronbach's α
LGBT Recognition Scale	481	40.4	5.3	10	0.36 - 0.96	64.1	0.83
Knowledge of LGBT	481	10.9	2.4	3	0.49 - 0.96	68.2	0.82
Understanding of LGBT	481	11.8	2.3	3	0.53 - 0.96	69.3	0.84
Tolerance for LGBT	481	17.7	2.5	4	0.36 - 0.95	53.6	0.81
Empathy Scale	481	20.3	2.9	5	0.38 - 0.86	40.4	0.75
Objectivity Scale	481	25.9	3.8	7	0.36 - 0.75	34.2	0.77

*Factor analysis, Maximum likelihood method, promax rotation.

the LGBT recognition scale was appropriate, thus 10 items were set just as the original version, and the total score was calculated. The average score of LGBT recognition scale score for the participants was 40.4 ± 5.3 points, the knowledge of LGBT for the participants was 10.9 ± 2.4 points, the understanding of LGBT was 11.8 ± 2.3 points, and the tolerance for LGBT was 17.7 ± 2.5 points.

3.3. Relationships between Participants' Characteristics and LGBT Recognition

The LGBT recognition outcomes (dependent variables) and the participants' characteristics (independent variables) were analyzed using a two-sample Student t-test and one-way ANOVA. The results are shown in **Table 4**. Multiple comparisons of the means were performed using the Tukey's honest significant difference method for LGBT recognition scale scores. Significant differences in LGBT recognition were found depending on the item *Thoughts about sexual identity*. The group with an experience of *Suffering from gender identity* had a significantly higher LGBT recognition scale score than the group without an experience of *Suffering from gender identity* ($t = 3.0, p < 0.05$). The group with an experience of *Sexual problem with a close person* had a significantly higher LGBT recognition scale score than the group without an experience of *Sexual problem with a close person* ($t = 3.9, p < 0.001$). The group with an experience of *Confession as an LGBT* had a significantly higher LGBT recognition scale score than the group without an experience of *Confession as an LGBT* ($t = 4.0, p < 0.001$). The group with an *LGBT learning experience* had a significantly higher LGBT recognition scale score than the group without an *LGBT learning experience* ($t = 5.1, p < 0.001$). Other than the above-mentioned results, there was no

Table 4. Relationships between participants' characteristics and LGBT recognition scale score (N = 481).

Participant's Characteristics	LGBT Recognition Scale			
	n	%	Mean	SD
Suffering of Gender Identity				t = 3.0*
Yes	20	4.2	43.9 ± 4.7	} *
No	461	95.8	40.3 ± 5.3	
Sexual Problem in Close Person				t = 3.9***
Yes	76	15.8	42.6 ± 4.6	} ***
No	405	84.2	40.0 ± 5.4	
Experience of Confession from LGBT				t = 4.0***
Yes	122	25.4	42.1 ± 4.4	} ***
No	359	74.6	39.9 ± 5.5	
LGBT Learning Experience				t = 5.1***
Yes	338	70.3	41.2 ± 5.3	} ***
No	143	29.7	38.5 ± 5.1	

Two-sample t-test *p < 0.05, ***p < 0.001.

significant difference in the LGBT recognition scale score for the participant's characteristics.

3.4. Predictors of LGBT Recognition

To determine which variables affected LGBT recognition, stepwise multiple regression analysis was performed. Ten variables were entered as independent variables as follows: *Age*, *Student status*, *Diversity experience*, *Significant medical history*, *Suffering from gender identity*, *Sexual problem with a close person*, *Experience of confession as an LGBT*, *LGBT learning experience*, *Empathy*, and *Objectivity*. The multiple regression analysis showed an association of LGBT recognition with *Thoughts about sexual identity*, *Empathy*, and *Objectivity* (Table 5). Thus, the 5 significant predictors of LGBT recognition were *Empathy* ($\beta = 0.19$, $p < 0.001$), *LGBT learning experience* ($\beta = 0.18$, $p < 0.001$), *Objectivity* ($\beta = 0.15$, $p < 0.01$), *Sexual problem with a close person* ($\beta = 0.13$, $p < 0.01$), and *Suffering from gender identity* ($\beta = 0.09$, $p < 0.05$). These 5 significant predictors of LGBT recognition had a positive impact.

4. Discussions

This study identified the following 5 significant predictors of LGBT recognition by medical healthcare students in Japan: 1) *Empathy*, 2) *LGBT learning experience*, 3) *Objectivity*, 4) *Sexual problem with a close person*, and 5) *Suffering of gender identity*. These results suggest the necessity and importance of obtaining relevant LGBT learning experience, particularly for medical healthcare students, to enhance their LGBT recognition ability while studying in the university.

Table 5. Predictors of LGBT recognition (N = 481).

Factors	Standardized Multivariate Regression Coefficient
Empathy	0.19***
LGBT Learning Experience	0.18***
Objectivity	0.15**
Sexual Problem in Close Person	0.13**
Suffering of Gender Identity	0.09*
R ²	0.17
F	19.4***

Stepwise multiple regression analysis *p < 0.05, **p < 0.01, ***p < 0.001.

4.1. Participants' Characteristics

The participants in this study were undergraduate nursing students and graduate students of medical healthcare. The research collaborating institution was a paramedical education university. The undergraduate students from this university appear to have a better environment for obtaining LGBT knowledge than the undergraduate students from other universities. Therefore, it was speculated that the LGBT recognition of the surveyed undergraduate students of medical healthcare was higher than the LGBT recognition of undergraduate students of non-medical departments. Although research on sexual identity disorder has been conducted in Japan [6] [18], little research on LGBT has been performed. This implies that Japan is not well informed about LGBT compared with other developed countries. Although studies on the perceptions and knowledge of nursing students on LGBT patient care have been published in other countries, there is apparently no research on the LGBT recognition of nursing students in Japan [11]. As the participants in this study were undergraduate and graduate medical healthcare students, the findings of this research will be of great value to institutions that actually have opportunities to offer nursing to LGBT parties.

4.2. Related Factors for LGBT Recognition

LGBT recognition was confirmed to be significantly associated with *Empathy*, *LGBT learning experience*, *Objectivity*, *Sexual problem with a close person*, and *Suffering from gender identity*. Empathy, Objectivity, Sexual problem with a close person, and Suffering from gender identity are considered to be fostered by learning experiences. Knowledge is involved in alleviating prejudice of subjects who are prone to prejudice [19] [20]. Prejudice against gender identity disabled (GID) people which creates limitations can be reduced by acquiring more knowledge about these people [19]. As there may be little opportunities to come into contact with GID people, it would be very useful to increase knowledge about them by reading and studying books written by GID parties [19]. To better understand the situations and ideas of GID people, it is necessary to develop more educational programs, know their obstacles by learning from their works, or actually interact with persons with disabilities [18]. With the aim of under-

standing LGBT more, it would be useful to learn from their compositions or to actually engage with them. However, as there are limited opportunities to engage with LGBT, simulation learning by role playing is considered necessary.

Learning approaches may include passive learning strategies such as using lectures, videos, and slides, and active learning strategies in the form of role playing, simulation, and actual practice [21]. Active learning achieves higher learning efficiency. In role playing, the simulation is quite different from reality, thus greater awareness is developed as a result of a change in viewpoint [21]. Therefore, an educational program using LGBT role play simulation is recommended. Specifically, it is conceivable to play the roles of LGBT parties, such as simulating their worries over gender identity and the lack of understanding from the surrounding social environment. With this scenario, the student more fully realizes the troubles encountered by LGBT, thus they can cultivate empathy and objectivity which are thought to enhance LGBT recognition.

4.3. Future Challenges and Limitations

In the present study, the number of men and graduate students who participated was small. Hence bias regarding participant distribution cannot be completely excluded. The response rate of 55.5% implies that a robust data collection method should be further developed. Additionally, the weak correlation of the LGBT recognition scale score with the empathic scale score and the objectivity scale score remains an important issue. In the future, a large-scale survey targeting men, a wide range of age groups, and other occupational subjects should be conducted, with the aim of further refining the scale. Moreover, it is necessary to develop LGBT educational programs, improve LGBT recognition, and promote LGBT welfare.

5. Conclusion

The major predictors of LGBT recognition by medical healthcare students were *Empathy*, *LGBT learning experience*, *Objectivity*, *Sexual problem with a close person*, and *Suffering from gender identity*. These results underline the importance of carefully developing and providing LGBT educational programs to medical healthcare students.

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Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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