

# Medical students' perspective on LGBT curriculum in the Medicine Degree in Spain in 2019: an observational transversal study

## Perspectiva del estudiantado de Medicina sobre los contenidos LGBT en el curriculum del Grado de Medicina en España en 2019: un estudio observacional transversal

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Recibido: 5/10/22; Aceptado: 11/11/22; Publicado: 14:11/22

### Abstract.

*Introduction:* Lesbian, gay, bisexual, and transgender (LGBT) individuals face significant barriers in accessing appropriate and comprehensive medical care. The objective of this study is to evaluate the degree of preparedness and comfort autoperceived by spanish medical students and the factors that most determine their learning. *Method:* An online questionnaire (2019) was distributed to students (n=349) at 41 spanish medical schools. *Results:* Of 349 survey respondents, 326 were included in the final analysis. Globally, LGBT-related curricular content is taught to 16% (45/282) of medical students. Students often felt prepared addressing human immunodeficiency virus (170/309; 55%) and sexual orientation (149/305; 49%). They felt least prepared discussing barriers to accesing medical care (53/307; 17%) and sex reassignment surgery (61/306; 20%). Medical education helped 26,5% (82/310) of students feel "more prepared" and 22,4% (66/295) of students feel "more comfortable" to care for LGBT patients. *Conclusion:* sample size doesn't allow us to make generalizations. However, our results show a trend that generally, Spanish medical students feel as comfortable as students from other countries but less prepared to care for LGBT patients. Interaction with their peers has been shown as the most important source of formation.

**Keywords:** lesbian; gay; bisexual; transexual; homosexuality; comfort; medical education; education; sexual orientation; gender identity; curriculum; Spain

### Resumen.

*Introducción:* Las personas lesbianas, gays, bisexuales y transexuales (LGBT) se enfrentan a barreras en el acceso a una asistencia médica adecuada. El objetivo de este estudio es evaluar la presencia de contenidos relacionados a temática LGBT en el curriculum, el grado de preparación y comodidad en el trato a pacientes LGBT autopercebido del estudiantado de Medicina, y los factores que más han determinado su aprendizaje. *Métodos:* En 2019 se realizó una encuesta online a estudiantes de Medicina de las 43 Facultades de Medicina españolas. Se ha realizado un análisis descriptivo de los resultados. *Resultados:* De 349 respuestas, 326 fueron finalmente analizadas. Globalmente el contenido referente a la salud de las personas LGBT se enseña a un 16% (45 de 282) de estudiantes

de Medicina. Los temas enseñados con más frecuencia y en mayor profundidad son los relacionados con VIH y enfermedades de transmisión sexual. Los estudiantes se sienten más preparados para abordar VIH en personas LGBT (170/309; 55%) y orientación sexual (149/305; 49%). Se sintieron menos preparados para abordar las dificultades en el acceso a los servicios de salud por parte de personas LGBT (53/307; 17%) y cirugías de reafirmación de sexo (61/306; 20%). La educación médica ayudó a que el 26,5% (82/310) de los estudiantes se sintiesen más preparados y a que el 22,4% (66/295) se sintiesen más cómodos en el trato con pacientes LGBT. *Discusión:* el tamaño de nuestra muestra no permite considerar los resultados como generalizables, pero sí que muestra que la formación sobre salud LGBT se centra en el VIH y las enfermedades infecciosas, perpetuando estereotipos y dejando de lado otros aspectos sociales de la salud. También se observa que en general el estudiantado de medicina español se siente igual de cómodo, pero menos preparado, para abordar temas de salud LGBT que los estudiantes de medicina de otros países y que lo que más ha fomentado su formación en este sentido ha sido su interacción con otros estudiantes.

**Palabras clave:** lesbiana; gay; bisexual; transexual; homosexualidad; confort; educación médica; educación; orientación sexual; identidad de género; curriculum; España

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## 1. Introduction

Lesbian, gay, bisexual, transgender, and other gender identities and sexualities including (but not limited to) asexual, bisexual, fluid, gender-neutral, non-binary, panromantic, pansexual, and queer (which we will refer to as LGBT (1) throughout the article) tend to use health services less for fear of encountering a scenario of stigmatization of certain sexual practices, ignorance about the management of sexual diversity or direct discriminatory attitudes on the part of health personnel (2). In addition, if they go to these services, the fear of rejection due to their LGBT status leads people to be reluctant to provide information necessary for the care process and their feeling of isolation is reinforced, which makes it difficult to provide a quality care (3). Estimates calculate that, in Spain, at least 20% of LGBT people would have felt discriminated against in the health care of the National Health System (4).

Training during the Medicine Degree has an important weight in shaping the biopsychosocial approach of patients and in the development of communication skills of future doctors (5). Promoting knowledge about the health of LGBT people in educational content can represent an important advance towards a more inclusive society and a more equitable health system (6). In 2018, a systematic review was published in which scientific articles were compiled to date that evaluated the approach to health problems of the LGBT population. This review showed that training in this field is, in general, scarce and disparate (7). Among the studies in this review was the one conducted by White et al (8) conducted in 2015 at American and Canadian universities. In this study, an online survey and focus groups were carried out to evaluate whether there was training in universities on different LGBT health issues, the degree of preparation and comfort in dealing with LGBT patients, self-perceived by the student body, and the factors that most have determined their learning. Since this was the largest study conducted to date on medical students, we decided to emulate the methodology by applying it to the population of medical students in Spain.

The objective of this study is to evaluate the perceptions of the students of the Spanish Faculties of Medicine about the presence of different LGBT health issues and their depth in the curriculum, the factors that have most determined their learning, as well as the degree of preparation and comfort in the treatment of self-perceived LGBT patients.

## 2. Methods

A cross-sectional descriptive study was carried out with surveys based on an online form. The original White questionnaire (8) aimed at medical students was reproduced, adapted to the context of the Spanish university system and translated into Spanish. No validation study of the translated questionnaire (available in Annex II) has been carried out. The questionnaire, as well as the informed consent (Annex I) received the approval of the Research Ethics Committee of the Autonomous Community of Aragon (CEICA) on 10/23/2018, Act No. 18/2018 (available in Annex III).

The questionnaire consists of 23 questions, designed to be completed in 20 minutes. In any case, no time limit was imposed for its completion. It was available from February 14, 2019 to June 28, 2019 and open to students from the 41 medical schools in Spain existing at the time of the study. The survey was administered through Google Forms. Before accessing the survey, the participants had to give their approval to the informed consent. The dissemination of the online survey was carried out through email and WhatsApp by the delegations of the medical student organizations at the national level (State Council of Medical Students and the Spanish Federation of Medical Student Associations for International Cooperation) in each School of Medicine. To avoid sampling bias, it was avoided to request dissemination to LGBT associations of medical students. It was preferred not to send them through the faculties themselves to prevent students from feeling obliged to respond.

The inclusion criteria were being a medical student at a Spanish university or a recent graduate (less than one year). The exclusion criteria for the responses were not accepting informed consent, filling in less than 50% of the variables, or entering responses that were inconsistent with the question.

The variables that we measure through the questionnaire are (a) content coverage in the curriculum, (b) self-declared preparation, (c) perceived change in preparation as a result of passing through the Faculty, (d) self-declared comfort in treatment, (e) perceived change in comfort as a result of passing through the Faculty and (f) gender identity and sexual orientation of the participant. The details of the questionnaire are found in Annex II.

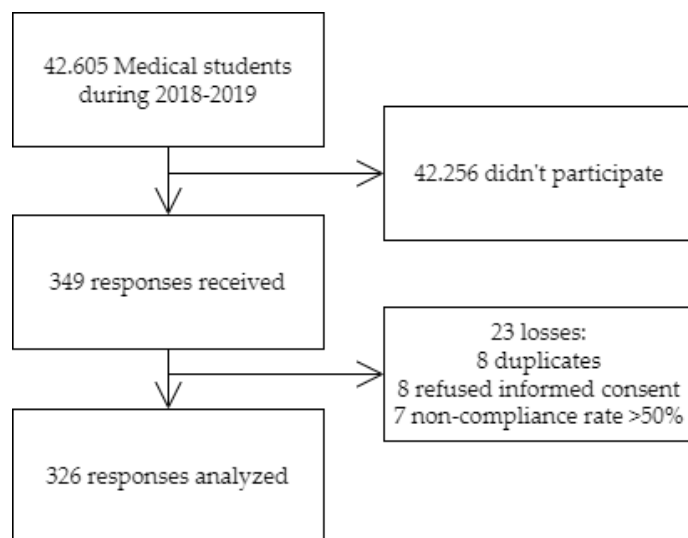
Given that our target population was Medicine students, made up of a total of 42,605 students in Faculties of Medicine in Spain in the 2018-2019 academic year (9), with a confidence level of 95% and a margin of error of 5%. The calculation of the sample size resulted in 381 participants.

A descriptive analysis of the sample was performed. When analyzing the data, two comparison groups were created: first and second graders, which we call the "PS" group, versus third and higher grades, which we call the "T+" group. The variables have been expressed as absolute frequency and percentage. Descriptive statistics were calculated using Google Sheets.

## 3. Results

A total of 349 responses were received, of which 8 duplicates were excluded, 8 responses without acceptance of informed consent and 7 questionnaires with a variable non-compliance rate > 50%. For each variable of interest, in the tables the number of positive responses appears in "n" (with "positivity" being described at the bottom of each table), while the number of participants for each variable is expressed as "N". For each variable, noncompliance can be calculated by subtracting the total number of participants

(326) minus the “N”. Finally, 326 responses were analyzed (Figure 1). This implied a response rate of 0.8% (349/42,605).



**Figure 1.** Flowchart of the study.

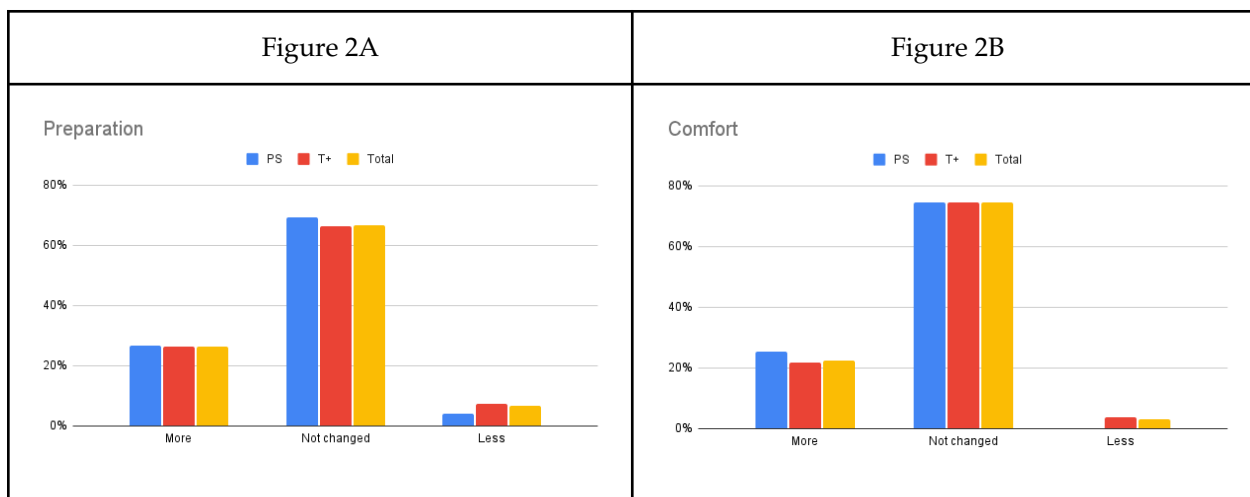
The distribution of the response by age shows differences with the target population. In the response population, an underrepresentation of the youngest age group (18 to 21 years) and an overrepresentation of the group of 22 to 25 years is observed. The distribution of the response by communities also differs from the target population. The autonomous communities of Andalusia and Valencia had less representation and the communities of Castilla-La Mancha and Madrid a greater presence. You can find more information about the participants by consulting the tables in Annex IV. Most of the participants had Spain as their country of birth, were women and identified as LGBT. These and other characteristics such as the distribution by courses are described in Table 1.

Regarding the content referring to the health of LGBT people in the medical curriculum, 16% of our sample received training in this regard. Obtaining information about homosexual relationships in the clinical history is taught to 22.7% and the difference between homosexual behavior and identity to 6.3%. Obtaining information on gender identity in the clinical history is taught to 5.2%. The inclusion in the curriculum of each of the specific contents on the health of LGBT people is shown in Table 2 and the level of approach of these topics, in Table 3. The topics most included and treated in depth are HIV and other STIs in LGBT people. The topics less included and treated in depth have been body image and difficulties in accessing health services.

The self-declaration of the students' preparation for approaching each of the subjects studied is shown in Table 4. The topics in which the student body feels more prepared are those related to HIV and other STIs, as well as generic topics related to sexual orientation, coming out of the closet or gender identity. Of the latter, none reaches 20% of the student body. 84.7% of students declare to feel "comfortable" or "comfortable in a certain way" in the interaction with LGBT patients compared to those who declare to feel "neutrality", "discomfort in a certain way" or "discomfort". Among LGBT students, 91.8% declare they feel "comfortable" or "comfortable in some way" compared to 75.7% of non-LGBT students.

The preparation improved for 26.5% after passing through the medical school, the results being similar between both groups of students. For 66.8% of students, the preparation has not changed, as can be seen in Figure 2A. 22% of LGBT students consider that their preparation has improved, compared to 32% of non-LGBT students.

22.4% state that they feel "more comfortable" in dealing with LGBT patients as a result of their time in medical school, as can be seen in Figure 2B. These results are similar between first and second year students (25.5%) and third and older students (21.8%). Nor do they present differences between LGBT students (22.8%) and non-LGBT students (21.3%).



**Figure 2.** Changes self-reported by medical students in the preparation and comfort in the care of LGBT patients after passing through the faculty. (A) Preparation and (B) Comfort according to course of study. Sample size (A): first and second (PS) = 47, third and more (T+) = 248, Total = 295. Sample size (B): first and second (PS) = 49, third and more (T+) = 261, Total = 310.

Regarding the self-declared factors that have most influenced the increase in comfort in the care of LGBT patients, contact with other students, both LGBT and non-LGBT, is found, as can be seen in Table 5, being the courses online the factors that have had the least influence among those declared.

Table 1. Characteristics of medical students.

|                  | PS, n (%) | T+, n (%)  | Total, n (%) |
|------------------|-----------|------------|--------------|
| Year             |           |            |              |
| First            | 24 (43.6) | -          | 24 (7.4)     |
| Second           | 31 (56.4) | -          | 31 (9.5)     |
| Third            | -         | 55 (20.3)  | 55 (16.9)    |
| Fourth           | -         | 85 (31.4)  | 85 (26.1)    |
| Fifth            | -         | 55 (20.3)  | 55 (16.9)    |
| Sixth            | -         | 45 (16.6)  | 45 (13.8)    |
| Graduate         | -         | 31 (11.4)  | 31 (9.5)     |
| Country of birth |           |            |              |
| Spain            | 52 (94.5) | 255 (94.1) | 307 (94.2)   |
| Other            | 3 (5.5)   | 16 (5.9)   | 19 (5.8)     |

| Age                     |              |              |              |
|-------------------------|--------------|--------------|--------------|
| Mean (SD)               | 22 (0.5)     | 24.6 (0.2)   | 24.1 (0.2)   |
| Median (IQR)            | 21 (20 a 22) | 24 (23 a 26) | 24 (22 a 25) |
| Gender identity         |              |              |              |
| Woman                   | 32 (58.2)    | 181 (67)     | 213 (65.5)   |
| Transgender woman       | 0 (0)        | 1 (0.4)      | 1 (0.3)      |
| Men                     | 19 (34.5)    | 79 (29.3)    | 98 (30.2)    |
| Trans man               | 1 (1.8)      | 4 (1.5)      | 5 (1.5)      |
| I dont know             | 2 (3.6)      | 0 (0)        | 2 (0.6)      |
| Other                   | 1 (1.8)      | 5 (1.9)      | 6 (1.8)      |
| Sexual orientation      |              |              |              |
| Heterosexual            | 20 (36.4)    | 119 (44.2)   | 139 (42.9)   |
| LGBT                    | 35 (63.6)    | 150 (55.8)   | 185 (57.1)   |
| Bisexual                | 21 (38.2)    | 83 (30.9)    | 104 (32.1)   |
| Gay                     | 9 (16.4)     | 36 (13.4)    | 45 (13.9)    |
| Lesbian                 | 2 (3.6)      | 13 (4.8)     | 15 (4.6)     |
| I'm not clear           | 1 (1.8)      | 8 (3)        | 9 (2.8)      |
| I do not want to answer | 0 (0)        | 5 (1.9)      | 5 (1.5)      |
| Other                   | 2 (3.6)      | 5 (1.9)      | 7 (2.2)      |

**Table 2 .** Inclusion of certain LGBT health issues in the training curriculum.

| Temas  | % (n/N)*        |
|--|-----------------|
| HIV in LGBT people   | 210/283 (74.2%) |
| Sexually Transmitted Infections (Non-HIV) in LGBT People                       | 154/272 (56.6%) |
| Intersex   | 117/284 (41.2%) |
| Sex affirmation surgeries  | 108/267 (40.4%) |
| Gender identity  | 107/285 (37.5%) |
| Safer sex for LGBT people  | 93/273 (34.1%)  |
| Sexual orientation   | 87/277 (31.4%)  |
| Risk of chronic diseases in LGBT people  | 79/261 (30.3%)  |
| Transition processes   | 74/274 (27%)    |
| Mental health in LGBT people   | 60/262 (22.9%)  |
| Use of tobacco, alcohol and other drugs among LGBT people                      | 48/268 (17.9%)  |
| Health in LGBT adolescents   | 46/278 (16.5%)  |
| Toxic relationships (for example, intimate partner violence) among LGBT people | 33/272 (12.1%)  |

|  |                |
|--|----------------|
| Exit from closet   | 33/275 (12%)   |
| Body image in LGBT people                                | 32/268 (11.9%) |
| Difficulties in access to health services by LGBT people | 32/275 (11.6%) |

\* Proportion of referring to contents that are included in a mandatory or optional way compared to those that are not part of the training curriculum.

**Tabl3 3.** Addressing LGBT health issues in the compulsory or optional training curriculum.

| Topics  | % (n/N)*        |
|---|-----------------|
| HIV in LGBT people  | 164/297 (55.2%) |
| Sexually Transmitted Infections (Non-HIV) in LGBT People              | 127/295 (43.1%) |
| Safer sex for LGBT people   | 79/296 (26.7%)  |
| Intersex  | 72/290 (24.8%)  |
| Risk of chronic diseases in LGBT people                               | 70/285 (24.6%)  |
| Sex affirmation surgeries   | 68/283 (24%)    |
| Gender identity   | 58/291 (19.9%)  |
| Sexual orientation  | 58/293 (19.8%)  |
| Transition processes  | 46/285 (16.1%)  |
| Use of tobacco, alcohol and other drugs among LGBT people             | 43/290 (14.8%)  |
| Mental health in LGBT people  | 34/283 (12%)    |
| Exit from closet  | 30/290 (10.3%)  |
| Health in LGBT adolescents  | 26/288 (9%)     |
| Toxic relationships (eg, intimate partner violence) among LGBT people | 24/282 (8.5%)   |
| Body image in LGBT people   | 22/283 (7.8%)   |
| Difficulties in access to health services by LGBT people              | 20/286 (7%)     |

\* Ratio of content that is covered in depth or in a basic way versus content that is covered very little or not at all.

**Table 4 .** Self-reported preparation by medical students for 14 topics related to the health of LGBT people.

| Health theme   | PS, n/N (%) | T+, n/N (%)   | Total, n/N (%) |
|--|-------------|---------------|----------------|
| HIV in LGBT people                                       | 21/47 (45%) | 149/262 (57%) | 170/309 (55%)  |
| Sexual orientation                                       | 20/46 (43%) | 129/259 (50%) | 149/305 (49%)  |
| Sexually Transmitted Infections (Non-HIV) in LGBT People | 21/47 (45%) | 123/263 (47%) | 144/310 (46%)  |
| Exit from closet   | 19/47 (40%) | 107/261 (41%) | 126/308 (41%)  |
| Gender identity  | 18/47 (38%) | 102/262 (39%) | 120/309 (39%)  |
| Health in LGBTI adolescents                              | 15/46 (33%) | 71/263 (27%)  | 86/309 (28%)   |

|   |             |              |              |
|---|-------------|--------------|--------------|
| Toxic relationships (for example violence within the couple) between LGBTI people | 15/47 (32%) | 70/263 (27%) | 85/310 (27%) |
| Mental health in LGBTI people   | 11/46 (24%) | 70/264 (27%) | 81/310 (26%) |
| Intersex  | 14/45 (31%) | 67/261 (26%) | 81/306 (26%) |
| Tobacco, alcohol and other drug use among LGBT people                             | 17/47 (36%) | 66/264 (25%) | 83/311 (27%) |
| Transition processes  | 12/45 (27%) | 57/260 (22%) | 69/305 (23%) |
| Body image in LGBTI people  | 12/46 (26%) | 52/263 (20%) | 64/309 (21%) |
| Sex Affirmation Surgeries   | 10/45 (22%) | 51/261 (20%) | 61/306 (20%) |
| Difficulties in access to health services by LGBT people                          | 12/45 (27%) | 41/262 (16%) | 53/307 (17%) |

Note: the values correspond to the percentage of students who chose “prepared”, “well prepared” or “very well prepared” as an answer, compared to those who chose “insufficient preparation” or “not at all prepared”. PS: first and second courses. T+: third course and later.

Table 5 . Self-reported factors by medical students that have most influenced the increase in comfort in the care of LGBT patients.

| Factors   | PS, n (%) | T+, n (%) | Total, n (%) |
|---|-----------|-----------|--------------|
| Other students who are not part of groups that do activities on LGBTI | 8 (15%)   | 37 (14%)  | 45 (14%)     |
| Interaction with LGBTI student groups                                 | 8 (15%)   | 34 (13%)  | 42 (13%)     |
| Readings  | 5 (9%)    | 24 (9%)   | 29 (9%)      |
| Interaction with LGBTI patients                                       | 3 (5%)    | 23 (8%)   | 26 (8%)      |
| Round tables or expert talks  | 5 (9%)    | 15 (6%)   | 20 (6%)      |
| Elective courses from other parts of the university                   | 3 (5%)    | 13 (5%)   | 16 (5%)      |
| Conferences   | 4 (7%)    | 12 (4%)   | 16 (5%)      |
| Compulsory theoretical training                                       | 2 (4%)    | 9 (3%)    | 11 (3%)      |
| Interaction with LGBTI doctors  | 1 (2%)    | 10 (4%)   | 11 (3%)      |
| Mandatory practical training  | 1 (2%)    | 9 (3%)    | 10 (3%)      |
| Optional courses offered by the faculty                               | 2 (4%)    | 8 (3%)    | 10 (3%)      |
| Clinical experiences focused on the LGBTI community                   | 1 (2%)    | 8 (3%)    | 9 (3%)       |
| Mandatory clinical training   | 0 (0%)    | 6 (2%)    | 6 (2%)       |
| Interaction with LGBTI teachers                                       | 3 (5%)    | 2 (1%)    | 5 (2%)       |
| Optional internship rotation  | 0 (0%)    | 4 (1%)    | 4 (1%)       |
| Online courses taught by other institutions                           | 2 (4%)    | 2 (1%)    | 4 (1%)       |
| Cursos online impartidos por la facultad de Medicina                  | 0 (0%)    | 0 (0%)    | 0 (0%)       |



|          |        |        |        |
|----------|--------|--------|--------|
| Not know | 3 (5%) | 3 (1%) | 6 (2%) |
| Others   | 0 (0%) | 8 (3%) | 8 (2%) |

## 4. Discussion

### 4.1. Main results

**Perception of content inclusion in the curriculum.** The emphasis of the preparation continues on topics related to a very specific aspect of sexual health (HIV and STIs). Access to health services, mental health or the experience of adolescence and healthy aging are practically absent from the training curriculum in Medicine.

**Perception of readiness and comfort in dealing with LGBT patients.** Students perceive that their time in medical school has little influence on their preparation regarding certain health issues of LGBT people. Similarly, they perceive that their medical training has a limited impact on comfort in dealing with LGBT patients.

**Perception of factors that have most influenced learning.** The factor that had the greatest influence on this perceived increase was the interaction with other students, whether or not they were part of LGBT groups.

### 4.2. Limitations

**Sample size.** The main limitation of our study has been the low response rate (our sample represents 0.8% of the total population of medical students). We failed to reach the calculated sample size of 381 participants. Due to this, with a confidence level of 95%, a sample size obtained of 326, an unknown proportion in the population (therefore, we apply 50%) and a population size of 42,605 medical students (9), the margin of error is 5.41%. We have been surprised by the low level of participation, in a population with tens of thousands of students. We believe that it is necessary to raise awareness among students to train professionals who can provide better health care, for the good of patients.

**Participation bias.** In our sample, 57.1% of the participants considered themselves LGBT. In Spain, this proportion is 12% (10). If a larger non-LGBT population had been included, the results would have varied, since we assume higher expectations when it comes to receiving training on health issues for the LGBT population (11). In addition, the average age of our sample is greater than that of the population, both in general and separating by groups of first and second compared to the rest of the courses. That there is greater participation of older students may be due to the fact that those extra years have allowed them to develop a special sensitivity to the subject of the survey, being more likely to participate than their younger peers. This difference in ages is not accompanied by a difference in the distribution of grades, which is relatively homogeneous, with a greater representation of the central grades (third, fourth and fifth). The overrepresentation of participation from the communities of Madrid and Castilla-La Mancha may be related to the origin of some of the authors of the study from these communities, where dissemination may have been more effective.

Regarding the specific limitations of the questionnaire, we can comment on the following.

**Lack of previous and recent studies in Spain.** Having emulated and translated the White questionnaire (8) into Spanish, there are no validation studies of it or previous

results in the Spanish student population, so we cannot compare our results with previous studies in the same population.

**LGBT terminology.** We have detected that "Queer" was introduced as sexual orientation, when in reality it is a term that refers to gender identity. Also, we consider that instead of differentiating between "Woman" and "Trans woman", it should have been categorized as "Cis woman" and "Trans woman", since the term "Woman" could cover both cis and trans people. Idem with "Man" and "Trans man". This issue was also detected by the participants. The terms "Gay" and "Lesbian" refer to homosexuality depending on whether your identity is male or female. As we already collected gender identity in another question, both could be categorized as "Homosexual".

**Likert scales.** There are too many categories in some questions and the nuances between them are very subtle, for example, categorizing as "I feel comfortable" with "I feel, in a certain way, comfortable", so we suspect that in different situations, the same person could select different shades.

**Adequacy of contents to the curriculum of the Degree in Medicine.** Some items such as "Intersexuality" and "Sex reaffirmation surgery" are too complex for clinical practice, not only for a medical student, but also for any doctor who has not specialized in these topics, so the degree of preparation to address them will always be low if medical students are asked. In White's study (8) it was decided to eliminate first-year students from the analysis, since it was suspected that they would not be able to assess the LGBT content of the curriculum. In our study we have maintained their answers in the analyses.

#### 4.3 Relationship with similar publications

Despite not being able to ensure the representativeness of the sample, we did observe that in the original study by White (8), 62.6% of students considered that they were better prepared after their medical training to deal with LGBT content, while in our sample, it only improved for 26.5%. This difference may be due to the overrepresentation of LGBT students in our sample (15.9% in White, compared to 57.1% in our sample) and the greater awareness, expectations (11) and prior training of this group on LGBT health content. In the original study, it was already significantly found that LGBT students are less likely to state that they were "more prepared" thanks to their university education, compared to their non-LGBT peers (39.5% in LGBT vs. 67.0% in non-LGBT,  $p < 0.001$ ). Given that this variable represents a self-perception of preparation, it could be interpreted as meaning that the preparation of Spanish students is really lower than that of students from other countries, or that the expectations of Spanish students are higher and therefore they consider that their learning is not according to the level that they should have acquired. It is possible that the reality is a combination of both factors, and that on the one hand in Spain there is less specific training in the field of equality, but that there is a greater demand from the student body. In a study in the United Kingdom, it has been seen that the degree of confidence in the treatment of LGBT patients increases significantly as the years of medical training progress (12), but this fact is not reflected in our study.

Similar results have been obtained in studies of nursing students, where 40% do not feel prepared to attend to the needs of LGBT patients and 85% declare that nursing training does not prepare them for it (13) either, since 80% declare that there is no specific training (14). 85% of medical students in the United Kingdom also declare the lack of LGBT health syllabus in university education (15). These data contrast with the perception of the US Deans of Medicine, who state that most medical schools cover more than 50% of the 16 identified LGBT health topics (16).

Both in our study and in others, the LGBT health topics included most frequently and in greatest depth are HIV and STIs (8,17,18). We believe that this scenario perpetuates certain stereotypes and training and research on other LGBT health issues should be encouraged, not only focused on the biological aspect, but also on the psychological and social determinants of health.

In White's original study (8), 84.3% of students were "comfortable" or "somewhat comfortable" interacting with LGBT patients. This result is consistent with the 84.7% that we have found in our sample. Likewise, among LGBT students we have also found this concordance in comfort (94.3% in White, compared to 91.8% in our study) and among non-LGBT students (81.4% in White, compared to 75, 7% in our study). However, while in White 46.3% feel more comfortable after their training, in our sample, only 22.4% feel more comfortable. These differences can be explained due to the higher expectations (11) of our sample, as we have previously commented. In other studies in medical students, this high level of comfort on the part of the student body, both LGBT and non-LGBT, is also reflected in providing care to LGBT patients (19).

In White's study (8), LGBT students are less likely to say they are "more comfortable" because of their medical training than non-LGBT students (30.3% vs. 49.3%). In contrast, in our study, this difference is not so marked (22.8% in LGBT vs. 21.3% in non-LGBT). We believe that in the White population, non-LGBT participants are not as exposed to LGBT health content, so the training they receive at university helps them feel more comfortable, while in the LGBT population, expectations were higher than what was then offered to them (11). That this fact does not occur in our population, leads us to think that the non-LGBT population is quite exposed to discourses or to the visibility of LGBT issues, sharing their expectations.

Regarding the factors that most influence the increase in comfort, the most effective in White's sample (8) were mandatory preclinical courses (declared by 36.7% of the participants), interactions with LGBT patients (24, 8%) and personal experiences (with 23.5%), while in Spain, the factors that have most influenced have been contact with other students (14%), interaction with student groups or associations that carry out activities LGBT-themed (13%) and readings (9%). In our study, the dissemination has been fundamentally by student associations, so the participants may have a greater link to these student groups and the training services they offer. It is interesting to see how the most influential factor in comfort for US and Canadian students is required pre-clinical courses (8,20). These courses do not exist in Spain and could be considered as a measure to introduce in the curriculum. Interaction with LGBT patients is an important factor in both White's study and ours. Creating an appropriate environment in consultation for patients to identify themselves as LGBT can not only lead to an improvement in care, but also allow doctors to feel more comfortable with future LGBT patients.

Similar experiences in other countries show that learning through sessions on LGBT health issues taught by peers in higher education, case presentations, and patient panels significantly improve preparedness and comfort (20-21). Other methods described in the literature for teaching LGBT health topics are "problem based learning"/"Problem based learning" (PBL/PBL) and small group activities (18). The inclusion of content in social sciences could be positive in the development of social commitment with these groups (22). We believe that the introduction and evaluation of these teaching methods in Spanish universities would be very interesting to assess both the acquisition of skills and the reception by the student body compared to the traditional master class model. However, both in White's study and in ours, the methods that least influence comfort have been

online courses, both taught by the Faculty of Medicine and by other institutions, for which we warn the organizers of the teaching that it may not be worth putting this kind of methodology into practice.

#### 4.4 Indications for future research

Given the results we have obtained, we first suggest carrying out a validation study of the translated questionnaire. Secondly, we suggest that in order to obtain a greater participation of the Medicine student body, the Faculties of Medicine and the Student Delegations be actively involved, that they follow up on how the participation rate is going in each center so that they make an active promotion of participation and not just a mere dissemination of the questionnaire. Periodic studies should be carried out to assess the degree of implementation in the curriculum and preparation, not only in Medicine students, but also in other degrees in the health field. In addition, these studies should be accompanied by qualitative research that seeks to identify the causes of the differences between the different subgroups that are formed.

### 5. Conclusions

- This paper presents the results of the first study carried out on the perception of the inclusion of contents on affective, sexual and gender diversity in undergraduate studies in Medicine in Spain.
- Students perceive that their time in medical school has little influence on their preparation regarding certain health issues of LGBT people. Similarly, they perceive that their medical training has a limited impact on comfort in dealing with LGBT patients. However, it is possible that the lack of perceived improvement is due to the fact that the students started from a high degree of comfort prior to their training. The factor that had the greatest influence on this perceived increase was the interaction with other students, whether or not they were part of LGBT groups.
- The emphasis of the preparation continues on topics related to a very specific aspect of sexual health (HIV and STIs). This scenario could cause long-term damage by perpetuating certain stereotypes related to the LGBT community, especially in gay men or MSM. In addition, this excessive emphasis can reduce the understanding of other dimensions of LGBT health, its social determinants and the visibility of other realities within the group.
- Some key topics, such as access to health services, mental health or the experience of adolescence and healthy ageing, are practically absent from the training curriculum in Medicine. In addition, those topics that are included more frequently are not covered in depth. This could be due to the excessive emphasis on the biomedical paradigm when explaining the occurrence of certain health problems.

**Supplementary material:** Annexes (Annex I. Electronic informed consent; Annex II. Questionnaire; Annex III. CEIC favorable opinion; Annex IV. Extra tables).

**Funding:** There has been no funding.

**Acknowledgments:** We thank the State Council of Medical Students (CEEM), and the Spanish Federation of Medical Student Associations for International Cooperation (IFMSA-Spain) as well as their respective Student Delegations and Committees for disseminating information among Medicine students. Likewise, we thank all the students who have participated for their collaboration by filling out the survey.

**Declaration of conflict of interest:** The authors declare that they have no conflict of interest.

**Author contributions** : Concept and design: Gil-Borrelli, Latasa, G. Abiétar, Martínez, Pujol-deCastro; Data collection: G. Abiétar, Martínez, Pujol-deCastro; Data analysis: Gil-Borrelli, Latasa, Gasch; Drafting of the manuscript: Pujol-deCastro; Review: Gil-Borrelli, Latasa, G. Abiétar, Martínez, Pujol-deCastro, Gasch

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