



Sexuality education and sociocultural influences: insights into indifference among university students

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Abstract

Objective This study analyses the impact of sexual education on university students in Spain, with the objective of identifying distinct attitudinal profiles towards sexuality and exploring the influence of sociodemographic variables.

Methods Between December 2020 and April 2021, a total of 1,028 students completed a questionnaire assessing their attitudes towards sexuality. The sample predominantly comprised undergraduate students (93%), women (67%), and heterosexual individuals (80%), with an average age of 21. Over half of the participants identified as Christian (51%) and had not yet left the family home (53%).

Results A latent class analysis was conducted to identify attitudinal profiles, and chi-squared tests examined the influence of gender, sexual orientation, and religiosity. The instrument demonstrated good internal consistency ($\alpha = .813$), though five items exhibited low discriminatory power. Factor analysis revealed four components accounting for 59.85% of the variance, supporting the scale's structural validity. Three profiles emerged regarding general opinions on sexuality: unfavourable (17%), largely comprising women, heterosexuals and Christians; intermediate (68%); and favourable (15%), predominantly including men, non-heterosexuals and non-religious participants. Concerning sexual myths, four profiles were identified: indifferent (31%), those who accept myths (2%), intermediates (48%), and rejecters (20%), the latter composed mainly of non-heterosexual students. Gender, sexual orientation, and religious affiliation significantly influenced all identified profiles ($p < .05$).

Conclusions Findings highlight the need to address gender, sexual diversity, and religiosity in sexual education programmes. The prevalence of indifference and limited critical engagement suggests a pressing need for more inclusive, evidence-based approaches in university contexts.

Keywords Sex education · College students · Sexual behavior · Attitudes towards sexuality · Sex stereotypes · Latent class analysis

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Introduction

The conceptualisation of sexual education (SE) has progressively evolved, shaped by the changing global sociopolitical landscape. International organisations, notably the United Nations Educational, Scientific and Cultural Organization (UNESCO) and the World Health Organization (WHO), have redefined SE to accommodate diverse cultural and structural determinants of health. SE is now recognised as a lifelong process beginning at birth (UNESCO 2010). It manifests both formally—predominantly through educational institutions—and informally in familial, peer, and digital contexts. In structured learning environments, SE encompasses a multidimensional scope, addressing emotional literacy, health promotion, gender equity, autonomy,

and bodily integrity, including biological knowledge such as reproductive health. Instruction may be explicit, as seen in curricular content on menstruation or HIV prevention, or implicit through activities promoting inclusivity and respect. Nevertheless, SE delivery is often affected by misinformation, normative bias, and curricular gaps.

As early as 1975, WHO defined sexual health as the integration of somatic, emotional, intellectual, and social components of sexuality, contributing to individual wellbeing and relational fulfilment (WHO 2015). Anchored in a human rights paradigm, this perspective emphasises interpersonal connection, communication, and self-realisation (UNFPA 2014; WHO Executive Council 54 1974). Health education frameworks have subsequently incorporated sexuality's affective dimensions—such as desire, attraction, and love (UN 1989)—beyond its physiological aspects (UNESCO 2015). Responding to this broadened view, UNESCO and WHO jointly endorsed comprehensive sexual education (CSE), which is rights-based, evidence-informed, and sensitive to developmental and sociocultural context. CSE aspires to inclusivity, grounding its pedagogy in gender equality, personal responsibility, and respect (Kim et al. 2023; UNESCO 2015). Its core aim is to promote sexual health and wellbeing through knowledge, agency, and safe, consensual practices (Mark et al. 2021; UNESCO 2022).

Empirical evidence links quality SE with healthier sexual attitudes and behaviours, including delayed sexual initiation, reduced number of sexual partners, and safer practices (UNESCO 2016, 2022; WHO 2010). In contrast, programmes focusing solely on risk aversion have not demonstrated meaningful behavioural change (UNESCO 2015). Holistic approaches—those that move beyond biological essentialism to address social and relational aspects—are more effective (Lameiras-Fernández et al. 2021). Conversely, abstinence-only-until-marriage (AOUM) models, particularly prevalent in the United States and parts of Europe from the late twentieth century, promote sexual abstinence outside marriage as the sole morally and physically acceptable option (WHO 2018; Lindberg et al. 2006). Such models pathologise premarital sexual expression, often neglecting the diversity of sexual identities and experiences. Despite their persistence in some contexts, these approaches lack endorsement from global health bodies, which widely affirm the necessity and benefits of CSE (UNESCO 2021; UNFPA 2014). Contemporary frameworks advocate for context-specific, equity-driven SE tailored to the needs of various populations (UNESCO 2022; UNFPA 2019; WHO 2010).

Integration of SE into national curricula should be complemented by access to youth-friendly and culturally competent health services (UNESCO 2021), and include stakeholders such as families and educators (UNESCO 2022). As SE is lifelong, early and continuous engagement is essential.

Adolescents—and those younger—require comprehensive, developmentally appropriate education and services, a need that extends into adulthood (Pound et al. 2016; UNESCO 2018). Although pre-tertiary education may include SE components (UNESCO 2016; WHO 2010), university contexts are markedly under-researched. Most SE literature focuses on adolescents, overlooking the specific vulnerabilities and developmental needs of university students. As emerging adults, many students navigate early romantic and sexual relationships while contending with limited life experience and health literacy.

University students also encounter unregulated information, notably online pornography, which can distort perceptions of sexuality, reinforce harmful gender norms, and obscure awareness of sexually transmitted infections (STIs) and dysfunctions (Areskoug-Josefsson et al. 2019; Lameiras-Fernández et al. 2021; UNESCO 2022). This issue is particularly pressing for students in education and health disciplines, who will assume future responsibilities for delivering SE and promoting public health (UNESCO 2021). However, SE remains marginalised within many higher education programmes. Assumptions of prior competence are common, yet professionals often report insufficient training and discomfort when discussing sexual matters in clinical or pedagogical settings (WHO 2018).

This study investigates the relationship between SE and attitudinal dispositions toward sexuality among university students. Its objectives were, first, to gather a representative sample from a Spanish university and document their sociodemographic characteristics; and second, to identify distinct attitudinal profiles, analysing the influence of gender, sexual orientation, and religiosity. These findings aim to inform the design of context-sensitive, inclusive SE interventions within higher education systems.

Method

Design

A descriptive cross-sectional research design was utilised in this study. Information was obtained through a systematically developed questionnaire intended to evaluate the attitudes of university students towards sexuality throughout the 2020–21 academic year at the University of Spain.

Participants and sampling strategy

In the 2020–21 academic year, the University of Spain registered 18,556 students across 133 academic programmes. To ensure representativeness, sampling calculations indicated the need for 377 participants at a 95% confidence level with a 5% margin of error, or 641 participants for a

99% confidence level (Qualtrics 2020). The questionnaire was accessible online from December 2020 to April 2021. Recruitment was carried out via targeted social media posts shared through popular student channels at the University of Spain, inviting voluntary participation. All respondents were of legal age at the time of response. Anonymity and confidentiality were assured, with no collection of names or identifiable data.

Materials and procedure

The questionnaire was in Spanish, and was designed with adequate consideration of a young public, adapted to diversity, user-friendly, and easy to fill in order to attract the largest possible number of participants (Braun et al. 2021). A committee of health and education experts reviewed and approved the questionnaire, and a group of 11 university students piloted it before its announcement in social media, in order to ensure that all questions were clear and well understood. The questionnaire consisted of two parts, with a first section that explores sociodemographic data such as age, type of studies, years at university, gender, sexual orientation, religious affiliation, and type of family and housing. The second part gathers attitudes towards sexuality and it was composed of two scales, eight opinions and seven myths, with four possible answers: agree, indifferent, disagree, don't know/don't respond (DK/DR) (Table 1). In order to simplify the analysis, indifferent, don't know, and don't respond were unified in one item: no opinion. Healthier attitudes would correspond to showing greater agreement with the opinions and greater disagreement with the myths.

Data analysis

Statistical analyses were performed using MPLUS software (Muthén and Muthén 2025). The analysis included descriptive statistics of sociodemographic data and two scales of attitudes towards sexuality. Frequencies and percentages were calculated and averages included as appropriate. The reliability of two scales, opinions and myths, was estimated

by the Cronbach's alpha coefficient, with values of 0.752 and 0.788 respectively. Questionnaires with alpha values of 0.70 or higher are suitable for research, so two scales revealed acceptable internal consistency. In order to perform a multivariate analysis, latent class analysis (LCA) was chosen to allow the study of different variables at the same time (Collins and Lanza 2010; Magidson et al. 2020). Utilising this statistical technique, new, underlying, or latent variables can be discovered and characterized; though not directly observable they may influence the relationship between the items being proposed. Two scales of attitudes towards sexuality, opinions, and myths, and new groups of university students, profiles of opinions and profiles of myths, are defined through the probability of showing different attitudes. The odds to belong to one or other profile can also be calculated (Goodman 1974). Chi-squared statistics was used to calculate the influence of sociodemographic factors and categorical outcomes on the composition of different profiles of students (Nunnally and Bernstein 1994). Significance was set at $p < 0.05$. In this analysis, 8 no-woman/no-man people were excluded in order to adjust Chi-squared test norms.

Results

Participants' characteristics

The final dataset comprised 1,028 students enrolled at a Spanish university. The sample was predominantly composed of undergraduate students (93%), with a mean age of 21 years, ranging between 18 and 49. Approximately 22.9% were in their first year of study. Women represented 67% of the cohort, and eight individuals chose not to identify as either male or female. In terms of sexual orientation, the majority (80%) identified as heterosexual, while 12% reported being bisexual and 3.4% identified as homosexual. The sample also reflected a majority of students identifying with the Christian faith (51%), and 53% indicated that they were still living in a dependent household arrangement.

Table 1 Attitudes towards sexuality

Opinions		Myths	
1	Talk about sex	1	Sexuality: only in middle age
2	Masturbation	2	Lost virginity as the transition to adulthood
3	Oral sex, anal sex	3	Sex matters more to boys than to girls
4	Consumption of pornography	4	Jealousy is the expression of true love
5	Polyamory	5	Porn teaches good ideas
6	Sexual fantasies	6	Condoms decrease pleasure during intercourse
7	Consumption of drugs during intercourse	7	Circumcision should be mandatory
8	Sex among the elderly		

Psychometric properties of the questionnaire

The reliability analysis of the 15-item scale yielded a Cronbach's alpha coefficient of .813, indicating acceptable internal consistency for research purposes. Examination of the corrected item-total correlations revealed that five of the fifteen items fell below the recommended threshold of .30, suggesting low discriminative power in relation to the overall construct measured. These items were: *opinion: talking about sex* (.043), *opinion: masturbation* (.170), *opinion: oral or anal sex* (.171), *opinion: having sexual fantasies about someone familiar* (.109), and *opinion: sex among the*

elderly" (.164). The figure 1 visually illustrates the discriminative capacity of each item, with a reference line at .30 to help identify those that may require revision or reformulation to improve the psychometric quality of the instrument.

With regard to the validity of the instrument, a principal component analysis (PCA) was conducted using Varimax rotation. Of the 15 items analysed, 14 presented communalities above .50, indicating a substantial proportion of shared variance with the extracted latent dimensions, and thus a significant contribution to the factorial structure. The analysis revealed four components with eigenvalues greater than 1, jointly explaining 59.85% of the total variance (Figure 2).

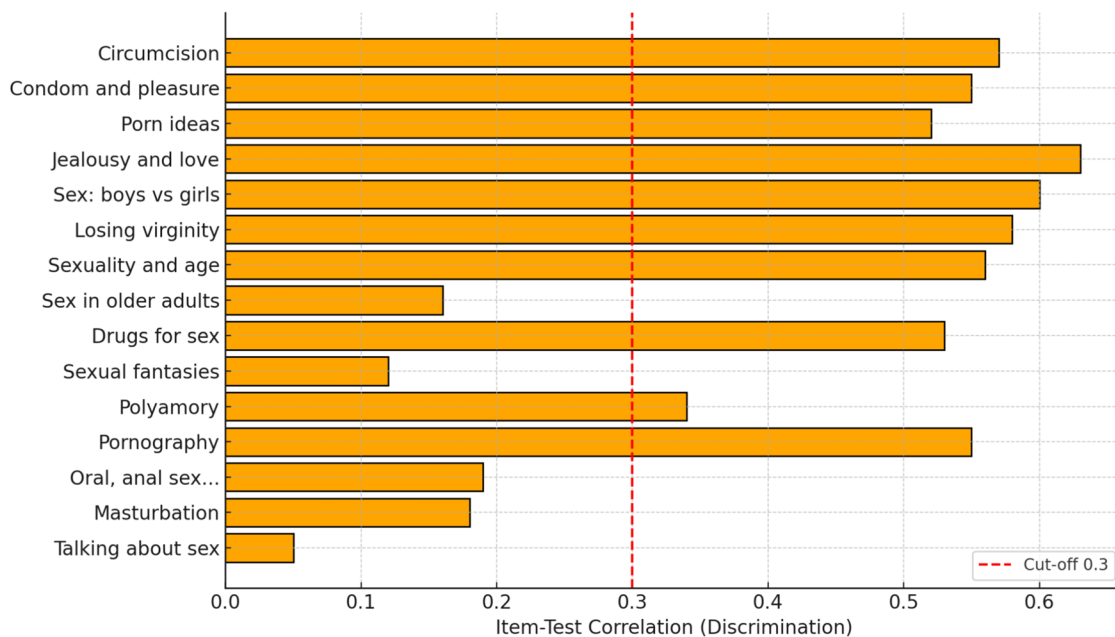
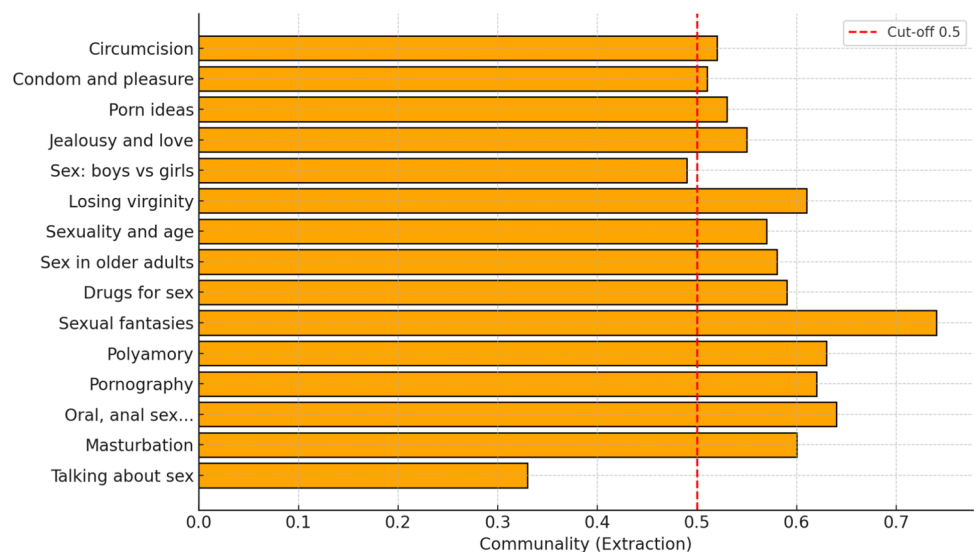


Fig. 1 Item Discrimination

Fig. 2 Communalities of the Items (PCA)



Specifically, the first component accounted for 28.31%, the second 11.95%, the third 11.03%, and the fourth 8.55%. The scree plot showed a clear break after the fourth component (Figure 3), supporting the decision to retain four factors. This factorial structure suggests the presence of distinct underlying dimensions that organise the attitudes and beliefs about sexuality addressed by the scale. The model converged in six iterations, indicating a stable factorial solution.

Based on the rotated component matrix, four distinct factors were identified, each reflecting a coherent thematic grouping of items according to their highest loadings. The first component, *Normative Beliefs about Sexuality*, brings together items that convey traditional, moralistic, or socially normative views on sexuality. Examples include statements such as “Losing one’s virginity is an essential step to becoming an adult”, “Sexuality only exists from adolescence to middle age”, and “Sex is more important for boys than for girls”. This dimension also encompasses items that reflect gender bias and moral evaluations of specific sexual practices, such as circumcision and condom use. The second component, *Attitudes towards Alternative Sexual Practices and Age*, comprises items referring to less conventional or more marginalised aspects of sexuality, including “sex among the elderly”, “using drugs to enhance sexual experience”, and “polyamory”. These items appear to capture participants’ openness towards sexual practices that fall outside mainstream norms, as well as the intersection between age and sexual expression. The third component, *Openness to Sexual Exploration*, includes items such as “oral or anal sex”, “masturbation”, “pornography”, and “talking about

sex”. These reflect a disposition towards engaging in or discussing a broad range of sexual experiences. This factor may be interpreted as indicative of personal comfort and openness in relation to explicit aspects of sexuality. Finally, the fourth component, *Personal Desire and Fantasy*, is defined exclusively by the item “having sexual fantasies about someone familiar”, which displayed a particularly high factor loading (.840). Although this item stands alone, the strength of its association suggests it represents a meaningful and distinct dimension—one that may pertain to the private, internal domain of sexual desire, distinct from more socially mediated or normative frameworks.

Factor loadings were estimated using the principal components extraction method, and SPSS was instructed to apply the regression method for estimating factor scores. This approach allows for the generation of standardised factors that maximise the correlation between observed scores and latent true scores. It is particularly useful for subsequent analyses (e.g., regression or group comparisons). The regression method provides a more accurate representation of each participant’s contribution to the extracted factors, maintaining the shared variance among items and preserving the rotated factorial structure derived through the Varimax method.

Attitudes towards sexuality

In the first set of attitudinal items addressing general opinions on sexuality, no respondent expressed disagreement with the statement “talking about sex”. A substantial

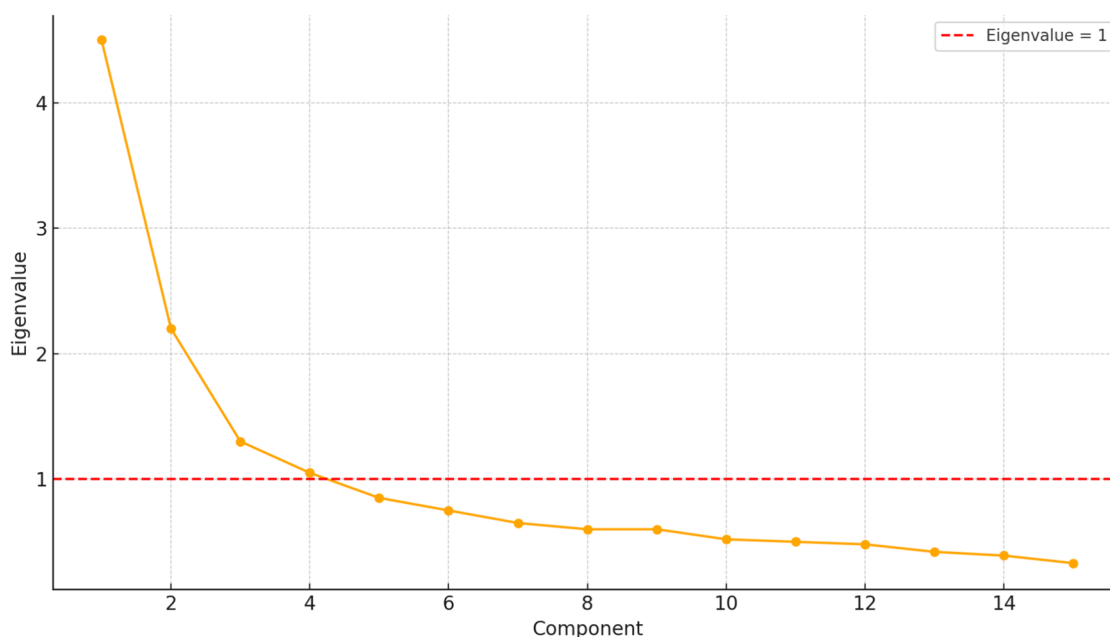


Fig. 3 Scree plot (principal component analysis)

majority—90% of participants—expressed positive views towards discussing sexuality, masturbation, and alternative sexual practices beyond penetrative intercourse. Regarding more specific topics, 43.7% of students supported the consumption of pornography, while 13.3% expressed agreement with polyamorous relationships, although 62.2% reported indifference in this area. Additionally, 56.8% of respondents expressed favourable attitudes towards sexual fantasies, 13.2% endorsed the use of drugs to enhance sexual experiences, and 27.3% were supportive of sexual relationships among older adults (Figure 4).

On the second scale focused on sexuality-related myths, there was a notable increase in the proportion of students selecting “don’t know” or “indifferent” across all items, with these responses ranging from 46.4% to 70%. A minority of respondents (23%) agreed with the idea that valuable insights could be obtained from pornography, while 30% believed that condoms diminish sexual sensitivity. In contrast, only 7% supported the notion that jealousy is an indicator of true love. The proportion of students who actively rejected or disagreed with the various myths ranged between 20% and 37% (Figure 5).

Latent class analysis

Following the necessary statistical adjustments, three distinct student profiles were identified based on attitudinal responses to opinion items (see Table 2), and five initial profiles—ultimately consolidated into four—were derived from the myth-related scale (see Table 3). The sociodemographic factors that most significantly contributed to profile differentiation were gender, sexual orientation and identity, and religious affiliation.

In relation to the opinion-based profiles, students were grouped into three categories: unfavourable/indifferent (17%), intermediate (68%), and favourable (15%) (see

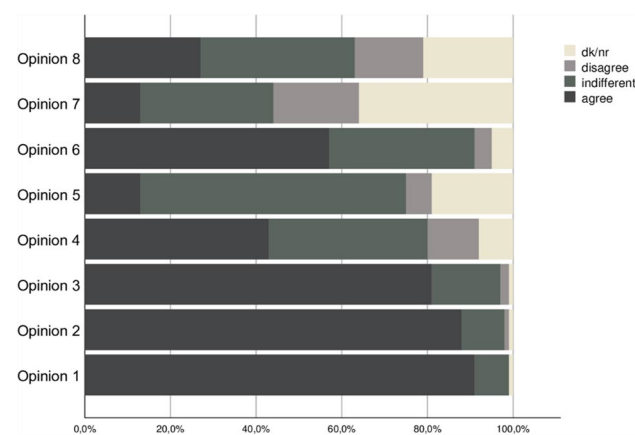


Fig. 4 Opinions towards sexuality

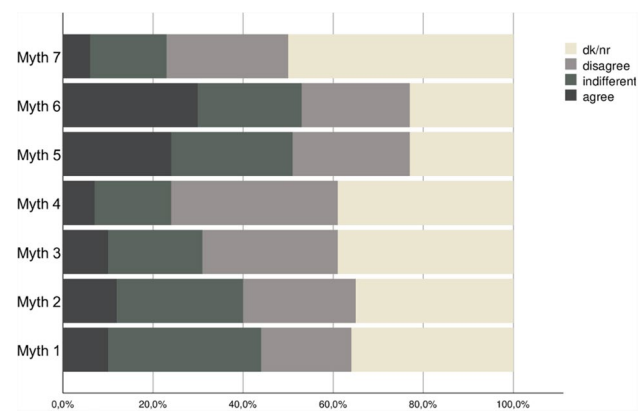


Fig. 5 Myths towards sexuality

Table 2 Latent class analysis: opinions

Opinions scale	Class 1	Class 2	Class 3
Students: <i>n</i> (%)	170 (16.54)	706 (68.68)	152 (14.79)
1: Talk about sex			
Agree	0.746	0.949	0.941
No opinion	0.254	0.051	0.059
Disagree	0	0	0
2: Masturbation			
Agree	0.344	1	0.968
No opinion	0.620	0	0.032
Disagree	0.037	0	0
3: Oral sex, anal sex			
Agree	0.309	0.897	0.934
No opinion	0.616	0.1	0.066
Disagree	0.075	0.002	0
4: Consumption of pornography			
Agree	0.051	0.469	0.749
No opinion	0.736	0.424	0.207
Disagree	0.212	0.108	0.044
5: Polyamory			
Agree	0	0.041	0.649
No opinion	0.831	0.913	0.351
Disagree	0.169	0.046	0
6: Sexual fantasies			
Agree	0.251	0.677	0.894
No opinion	0.683	0.275	0.106
Disagree	0.066	0.048	0
7: Consumption of drugs during intercourse			
Agree	0.015	0.079	0.377
No opinion	0.746	0.696	0.594
Disagree	0.240	0.225	0.029
8: Sexual relations among the elderly			
Agree	0.123	0.271	0.554
No opinion	0.683	0.560	0.398
Disagree	0.194	0.169	0.048

Table 3 Latent class analysis: myths

Myths scale	Class 1	Class 2	Class 3	Class 4	Class 5
Students: <i>n</i> (%)	317 (30.84)	13 (1.27)	255 (24.81)	242 (23.54)	201 (19.55)
1: Sexuality: only in middle age					
Agree	0.039	1.000	0.077	0.195	0.035
No opinion	0.888	0.000	0.799	0.776	0.226
Disagree	0.073	0.000	0.124	0.028	0.738
2: Losing virginity as the transition to adulthood					
Agree	0.033	0.925	0.068	0.276	0.041
No opinion	0.916	0.075	0.725	0.694	0.052
Disagree	0.051	0.000	0.207	0.030	0.907
3: Sex matters more to boys than to girls					
Agree	0.029	0.927	0.077	0.185	0.046
No opinion	0.961	0.073	0.374	0.775	0.075
Disagree	0.011	0.000	0.650	0.041	0.880
4: Jealousy is the expression of true love					
Agree	0.000	0.932	0.018	0.168	0.042
No opinion	0.967	0.068	0.307	0.747	0.086
Disagree	0.033	0.000	0.675	0.085	0.873
5: Porn teaches good ideas					
Agree	0.012	1.000	0.143	0.555	0.180
No opinion	0.883	0.000	0.334	0.389	0.264
Disagree	0.105	0.000	0.523	0.056	0.556
6: Condoms decrease pleasure during intercourse					
Agree	0.095	0.775	0.245	0.621	0.192
No opinion	0.792	0.225	0.549	0.294	0.268
Disagree	0.113	0.000	0.206	0.085	0.539
7: Circumcision should be mandatory					
Agree	0.041	1.000	0.043	0.076	0.023
No opinion	0.956	0.000	0.633	0.788	0.306
Disagree	0.003	0.000	0.325	0.136	0.671

Table 4). Statistically significant associations were observed between profile membership and the variables of gender ($p = 0.026$), sexual orientation ($p < 0.001$), and both religious affiliation and level of religiosity ($p < 0.001$ in each case). The unfavourable profile was more commonly composed of female, heterosexual, and Christian-identifying students, while the favourable profile included a greater proportion of male students, those identifying as non-heterosexual, and individuals who reported no religious affiliation (agnostic or atheist).

With respect to the profiles derived from the myth-related scale, five latent classes were initially identified: one primarily comprising indifferent students (31%), one characterised by widespread agreement with the myths (1.3%), two intermediate classes reflecting partial disbelief (48% combined), and one class clearly rejecting the myths (20%) (see Table 5). The most significant sociodemographic predictors for class membership were gender ($p = 0.002$), sexual orientation ($p = 0.003$), and both religious identification and religiosity ($p = 0.002$ and $p < 0.001$ respectively). Indifference was more

prevalent among female participants and those without religious affiliation. The myth-accepting group featured a higher proportion of male, heterosexual, and practising Christian students. Notably, the myth-rejecting profile included a larger share of non-heterosexual students, many of whom reported previous discomfort regarding their sexual orientation—suggesting a critical link between lived experience and myth rejection.

Discussion

The psychometric evaluation of the instrument revealed both strengths and areas for improvement. The reliability analysis indicated an acceptable level of internal consistency ($\alpha = .813$), supporting the overall coherence of the scale (Nunnally and Bernstein 1994). However, the presence of five items with corrected item–total correlations below the commonly accepted threshold of .30 suggests that certain items exhibit limited discriminative power with respect to

Table 4 Influence of sociodemographic factors in the characterisation of opinions on sexuality

Opinions scale	Class 1 Unfavourable	Class 2 Intermediate	Class 3 Favourable
Students	170 (16.54)	706 (68.68)	152 (14.79)
Gender ($p = 0.026$)			
Woman	128 (75.7)	467 (66.5)	92 (61.7)
Man	41 (24.3)	235 (33.5)	57 (38.3)
Sexual orientation ($p < 0.001$)			
Heterosexual	154 (90.5)	565 (80)	99 (65.1)
Bisexual	9 (5.2)	82 (11.6)	33 (21.7)
Homosexual	3 (1.7)	28 (3.9)	4 (2.6)
Non-defined	4 (2.3)	31 (4.3)	16 (10.5)
Religious feeling ($p < 0.001$)			
Agnostic/atheist	75 (44.1)	430 (60.9)	109 (71.7)
Believer	72 (42.3)	240 (33.9)	40 (26.3)
Practicing	23 (13.5)	36 (5)	3 (1.9)
Religion orientation ($p < 0.001$)			
Not applicable	47 (27.6)	330 (46.7)	79 (51.9)
Christian	115 (67.6)	349 (49.4)	61 (40.1)
Other religions	8 (4.7)	27 (3.8)	12 (7.8)

the construct being measured. In terms of construct validity, the principal component analysis yielded a robust four-factor solution, accounting for 59.85% of the total variance, with high communalities for the majority of items (Costello and Osborne 2005). The resulting factorial structure aligns well with theoretically grounded dimensions of sexual attitudes,

encompassing normative beliefs, openness to non-traditional practices, sexual exploration, and personal fantasy. The convergence of the model and the conceptual coherence of the extracted components further reinforce the validity of the scale.

The majority of participants in the study were pursuing undergraduate degrees. Approximately two-thirds identified as female, and 80% self-reported as heterosexual. The mean age of respondents was 21.4 years. The gender identity question in the survey provided respondents with multiple options beyond the binary of male and female, including non-binary and non-specified categories. However, only 1.6% of the sample selected these non-binary options. Comparable gender distributions have been reported in studies conducted by Costa et al. (2015) in Brazil and Kaufman et al. (2023) in the United States. It is noteworthy that many studies fail to include gender-diverse categories, such as the Spanish Centre for Sociological Research's national survey on social and emotional relationships (CIS 2021). Moreover, in some cases, as in Burrell et al. (2019), inclusive options were provided but no students selected them. Confusion between sexual orientation and gender identity remains a persistent issue in the literature (León-Larios and Macías-Seda 2017).

In relation to sexual orientation, the questionnaire offered four response categories: heterosexual, homosexual, bisexual, and undefined. Fehr et al. (2018) proposed a seven-point continuum to classify sexual orientation among university students, yielding distribution patterns comparable to the present sample. Existing literature reveals variability in the

Table 5 Influence of sociodemographic factors on the characterisation of myths

Myths scale	Class 1 Indifferent	Class 2 Acceptors	Class 3 Intermediate	Class 4 Intermediate	Class 5 Rejecters
Students	307 (30.84)	13 (1.27)	255 (24.81)	242 (23.54)	201 (19.55)
Gender ($p = 0.002$)					
Woman	239 (76.1)	6 (50)	170 (67.4)	132 (54.7)	140 (69.6)
Man	75 (23.8)	6 (50)	82 (32.5)	109 (45.2)	61 (30.3)
Orientation ($p = 0.003$)					
Heterosexual	238 (75)	11 (84.6)	203 (79.6)	228 (94.2)	138 (68.6)
Bisexual	44 (13.8)	0 (0)	30 (11.7)	8 (3.3)	42 (20.8)
Homosexual	13 (4.1)	1 (7.6)	11 (4.3)	1 (0.4)	9 (4.4)
Non-defined	22 (6.9)	1 (7.6)	11 (4.3)	5 (2)	12 (5.9)
Religious feelings ($p = 0.002$)					
Agnostic/atheist	193 (60.8)	5 (38.4)	174 (68.2)	122 (50.4)	120 (59.7)
Believer	100 (31.5)	7 (53.8)	68 (26.6)	108 (44.6)	69 (34.3)
Practicing	24 (7.5)	1 (7.6)	13 (5)	12 (4.9)	12 (5.9)
Religion orientation ($p < 0.001$)					
Not applicable	153 (48.2)	3 (23)	127 (49.8)	74 (30.5)	99 (49.2)
Christian	153 (48.2)	10 (76.9)	123 (48.2)	148 (61.1)	91 (45.2)
Other religions	11 (3.4)	0 (0)	5 (1.9)	20 (8.2)	11 (5.4)

proportion of heterosexual respondents, ranging from 65% to 90.5% (Döring et al. 2017; Gerassi et al. 2023; Kaufman et al. 2023), with Ballester-Arnal et al. (2017) reporting a 94.2% heterosexual rate among Spanish university students. Regarding religiosity, students were asked both whether they identified as religious and, if applicable, the type of religion they followed. Over half of the participants reported being agnostic or atheist; approximately one-third identified as believers, though only 6% indicated they were practising. In a prior study conducted in Seville, 39% of students described themselves as atheist or agnostic, while 59% identified as Catholic (León-Larios and Macías-Seda 2017). In contrast, more than 50% of students in an American cohort identified as non-religious (Kaufman et al. 2023). Within the broader Spanish population, 57.8% identified as Catholic (of whom only 17.7% were practising), whereas 39.8% declared themselves atheist, agnostic, or indifferent to religion (CIS 2021). Interestingly, 22.9% of participants who self-identified as Christian simultaneously selected “agnostic/atheist” when asked about their religious feelings. This apparent inconsistency could be due to cultural affiliation (e.g., baptism) persisting in the absence of personal belief, or the influence of social norms prompting nominal identification with a religious group.

Participants were asked to express their agreement with a series of statements reflecting attitudes and beliefs about sexuality. In general, a considerable proportion of the sample expressed agreement with opinion-based statements, with affirmative responses frequently surpassing the 50% mark. Conversely, rejection of sexuality-related myths was less pronounced, often limited to 20–30% of respondents. These results are consistent with those reported by Beaumont and Maguire (2013), who found that attitudes among young people in Spain were still heavily influenced by stereotypes and misinformation regarding sexual education. A striking feature of the data was the high proportion of participants selecting either “don’t know” or “indifferent” across both opinion and myth-related items. In the case of opinion items, up to one-third of respondents chose one of these non-committal options, and this figure approached 50% for some of the myth-based items. When these two categories were combined, approximately half of the student sample appeared disengaged or unsure in their responses to sexuality-related statements. Although this could be interpreted as a limitation, previous studies suggest that non-responses themselves may carry interpretive value (Casola et al. 2020). This apparent disengagement may stem from multiple factors, including insufficient knowledge, discomfort, insecurity, or contextual factors such as the social restrictions and psychological toll of the COVID-19 pandemic (Montagni et al. 2019).

Notably, the majority of students expressed comfort with discussions about sexuality, including masturbation

and sexual fantasies. Non-penetrative sexual practices were also widely accepted. Terms describing non-monogamous or ambiguous relationship arrangements (e.g., “friends with benefits”, “it’s complicated”) elicited little resistance and were more often met with indifference than disagreement. These findings suggest a degree of normalisation of diverse sexual behaviours and preferences, warranting further examination of how sociodemographic variables—such as gender, sexual orientation, and religiosity—shape young people’s understanding and engagement with new forms of intimacy. The general openness to discussing sexuality reflects its pervasive presence in the students’ lived experiences, both formally and informally. This aligns with previous findings from the UK, where Pariera and Abraham (2020) reported that female university students engaged in conversations about sex an average of 13 times per day. The SKAT (Sexual Knowledge and Attitude Test) developed by Miller and Lief (1976) was among the first tools used to explore sexual attitudes in higher education contexts. Even in the 1970s, a substantial proportion of students endorsed masturbation as healthy, though a minority associated it with psychological harm. In the present study, more than 90% of students held positive views on masturbation. Resistance to pornography consumption was limited to 12%, and approximately 20% expressed concern regarding substance use during sexual encounters. Previous literature highlights regular exposure to pornography and psychoactive substances among university students (Folasayo et al. 2017; Meggett-Sowell 2019).

As for the myths, endorsement ranged from 7% to 30% across various statements. The least accepted included notions such as “jealousy is a sign of true love” and “sex is more important for men than for women”. Conversely, misconceptions such as “condoms reduce sensitivity” and “pornography offers useful sexual insights” had more substantial support. Approximately one-third of students agreed with the statement regarding condom-induced reduction in sensitivity, potentially undermining condom use despite this rationale not being commonly cited in prior studies on condom avoidance (Lally et al. 2015). Typical reasons instead include reliance on other contraceptive methods, impulsivity, substance impairment, lack of availability, or low perceived risk due to same-sex relationships or intentions to conceive. A particularly contentious item—“all men should be circumcised”—garnered agreement from 20% of students. Although the WHO has advocated voluntary circumcision in certain high-risk African contexts as part of an HIV prevention strategy (Bansi-Matharu et al. 2023), these justifications are unlikely to be relevant for the present sample, which did not include individuals from regions or religious backgrounds where circumcision is widely practised.

Latent class analysis (LCA) was employed to categorise students into distinct groups based on their attitudinal responses to sexuality-related statements. Unlike other

multivariate techniques such as factor analysis, which groups items or variables, LCA focuses on clustering individuals who exhibit similar response patterns in categorical data (Collins and Lanza 2010). Originating with the work of Paul Lazarsfeld in 1950, LCA initially applied to dichotomous variables, but has since evolved into a widely used method in social science research due to its versatility (Magidson et al. 2020). In the current study, three distinct classes emerged from the LCA of opinion-based items: an unfavourable/disengaged group, an intermediate group, and a favourable group. Notably, the intermediate profile (Class 2) encompassed over half of the sample. While this may limit the discriminative power of subsequent analyses, the prevalence of this profile probably reflects a broader trend of attitudinal ambivalence or indifference toward sexual education (Montagni et al. 2019). This finding aligns with previous research highlighting a lack of engagement in sexuality-related discussions (Yu et al. 2021) and suggests a critical need to investigate the determinants and implications of such disengagement.

Class 1, defined by less favourable attitudes toward sexuality, included a greater proportion of women, heterosexual students, and those identifying with Christianity. By contrast, Class 3, which reflected healthier and more progressive attitudes, comprised a higher percentage of men, individuals with non-heterosexual orientations, and those identifying as agnostic or atheist. These distributions are consistent with international studies linking religiosity and sexual conservatism (Evcili and Göbasi 2017; Jun and Oh 2020; Kaufman et al. 2023; Keresztes et al. 2020). However, they diverge from some Spanish-based research, which either found no significant influence of gender (García-Vega et al. 2017) or suggested that women were more likely to express positive sexual attitudes (León-Larios and Macías-Seda 2017).

While the field of study did not significantly affect attitudinal profiles in the present research, Costa et al. (2015) observed disciplinary variations: engineering and earth sciences students were more likely to endorse stereotypical beliefs; social science and health students clustered in a moderate group; and humanities students were more likely to express progressive views. Such inconsistencies suggest a need for further exploration into how academic environments shape students' understanding of sexuality.

Turning to the myths section, five initial classes were identified through LCA. These were later reduced to four, comprising: Class 1 (indifferent), Class 2 (myth-endorsing), Classes 3 and 4 (intermediate), and Class 5 (myth-rejecting). Class 1 included a greater share of women and non-religious students. This corresponds with some findings showing that women may express more prejudiced views in sexual matters (Evcili and Göbasi 2017), though this is context-dependent. Class 2, which exhibited high levels of myth endorsement and strong acceptance of pornography, included more male,

homosexual, and Christian respondents—consistent with literature linking religious affiliation to greater acceptance of sexual myths (Martyniuk et al. 2015). Class 5, which represented around 20% of the sample, was characterised by consistently healthy attitudes and strong rejection of myths. This finding challenges prior reports of widespread misinformation among Spanish youth (Beaumont and Maguire 2013). Students in this group were more likely to identify as bisexual and female, a pattern also noted by León-Larios and Macías-Seda (2017). The two intermediate profiles (Classes 3 and 4) largely comprised heterosexual students. The main difference between these was religious affiliation: Class 3 had a greater share of non-religious respondents, whereas Class 4 included more religiously affiliated individuals.

From an educational standpoint, the primary objective of sexual education programmes should be to enhance student engagement—encouraging members of Class 1 to reflect more actively on issues related to sexuality, and promoting attitudinal shifts in Classes 2, 3, and 4 towards the healthier perspectives exemplified by Class 5.

Conclusions

SE is a dynamic and evolving field, increasingly recognised as essential for fostering healthy sexual attitudes and behaviours. The present study identifies a clear association between greater exposure to SE and more positive, informed attitudes towards sexuality among university students. Through latent class analysis, distinct student profiles were revealed, based on their acceptance or rejection of myths and opinions about sexuality. These profiles were influenced by key sociodemographic variables, including gender, sexual orientation, and religious affiliation. The findings highlight important implications for the design of future SE programmes. Interventions should be sensitive to the diverse backgrounds and values of students, addressing specific gaps identified in this research. In particular, the large proportion of participants who demonstrated attitudinal disengagement—whether through indifference, uncertainty, or non-response—points to an urgent need for more inclusive and responsive approaches. Understanding the roots of this disengagement and its broader consequences warrants further investigation. Future research should prioritise the exploration of psychological, cultural, and structural factors contributing to students' reluctance or inability to engage meaningfully with sexuality-related topics. These insights will be instrumental in shaping future SE initiatives that not only disseminate knowledge but also foster reflection, agency, and respectful dialogue (Mollen et al. 2024; Stephens and Ott 2020).

This investigation employed a cross-sectional, interdisciplinary design, which inherently limits the ability to

establish causality or directional relationships between the observed findings and potential influencing factors. Further longitudinal and context-specific studies are warranted to assess the potential impact of external events—such as the COVID-19 lockdown that commenced shortly after data collection began—and to better understand their implications.

Author contributions Clara Lahoz-García: conceptualization, investigation, writing — original draft, methodology, validation, visualization, writing — review and editing, software, formal analysis, project administration, data curation.

José-María Jiménez: investigation, methodology, validation, visualization, writing — review and editing, formal analysis, supervision.

María-José Castro-Alija: validation, visualization, writing — review and editing, formal analysis, supervision.

José-Luis Parejo: conceptualization, investigation, validation, visualization, writing — review and editing, software, formal analysis, project administration.

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Data availability The data that support the findings of this study are available from the corresponding author upon reasonable request.

Declarations

Ethical approval This research was approved by the Ethics Commission of Eastern Health Area of Valladolid, Spain (CEIM), code PI 20-1833. Before taking part in the study, all participants had information about the research.

Consent Written informed consent was obtained from all participating students, who were all made aware that they could withdraw from the study process at any time if they wished. All methods were carried out in accordance with the relevant guidelines and regulations.

Consent for publication All participants provided written consent for the publication of any data and images pertaining to them included in this study.

Conflicts of interest The authors declare no conflicts of interest.

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