



What do Spanish adolescents know (or not know) about sexuality? An exploratory study

Noelia Fernández-Rouco^a, Andrés A. Fernández-Fuertes^a, José Luis Martínez-Álvarez^b, Rodrigo J. Carcedo^b and Begoña Orgaz^c

^aDepartment of Education, University of Cantabria, Santander, Spain; ^bDepartment of Developmental and Educational Psychology, University of Salamanca, Salamanca, Spain; ^cDepartment of Basic Psychology, Psychobiology and Methodology of Behavioral Sciences, University of Salamanca, Salamanca, Spain

ABSTRACT

This paper explores Spanish adolescents' knowledge of six dimensions of human sexuality: anatomy and sexual physiology; sexual health; sexual behavior and human sexual response; affection and sexuality; sexual identity; and sexuality and society. A questionnaire to evaluate their knowledge was administered to a sample of 3853 adolescents aged between 12 and 18 ($M = 14.40$, $SD = 1.44$) from 38 secondary schools throughout Castile and Leon (Spain). The results show that adolescents of both genders, mainly those enrolled in lower-secondary education levels, tend to be misinformed about sexuality. Taking into account all the analyzed dimensions, results reveal that adolescents' knowledge of sexual identity is significantly greater than that of sexuality and society, or of anatomy and sexual physiology. In addition, women show more detailed knowledge than men, although the margin between genders is quite small. Finally, this work highlights the need for sexual education in order to promote more thorough scientific knowledge of sexuality among Spanish adolescents.

ARTICLE HISTORY

Received 19 July 2016
Accepted 9 January 2019

KEYWORDS

Adolescence; sexuality;
sexual knowledge; sexual
education; health

Sexuality is a key aspect of adolescent development (Tolman and McClelland 2011). The bio-physiological, emotional, cognitive, behavioral, and interpersonal changes associated with sexual development at this stage have long been a focus among researchers and professionals (Kontula 2010). These changes are mediated by assumed heteronormativity, which is the expected consistency among body, gender, identity, and sexual practices (Stryker 2008). Individuals who do not conform to the hegemonic supremacy of heteronormativity are considered inferior and imperfect, based on the presumption that heterosexuality is the only normal and natural expression of sexuality (Cole, 2009). Furthermore, adolescent culture is filled with overt and covert messages about sex. In school practices, it permeates the social networks that students create to connect with each other, but at the same time, it counteracts institutionalized curricula that sometimes fail to address students' personal concerns (Cassar 2015).

The behavioral dimension of sexuality, mainly that concerning sexual risks and their prevention, has remained the focus of sex education and research (García-Vega,

Menéndez, García, & Rico, 2010). However, a better understanding of adolescent sexuality requires more comprehensive sexual knowledge: it is not possible to express healthy sexual behaviors while holding on to false knowledge about sexuality (Varela and Paz 2010).

Sexual knowledge and sexual behavior in adolescence

Knowledge, beliefs, and attitudes have often been treated as synonyms due to the relationship among them (Sturgis and Allum 2004). In this work, we assume that sexual myths reflect a lack of adequate knowledge about sexuality. In this regard, existing scientific evidence indicates the need for educational programs that counter these common, fallacious beliefs (Hindman and Yan 2015). According to Milligan and Neufeldt (2001), the more sexual knowledge that individuals possess, the less likely they are to accept the erroneous views of their peers.

Studies on the relationship between sexual knowledge and sexual behavior have demonstrated the existing complex interconnection between the two. On the one hand, some studies have concluded that sexual knowledge is not always reflected in actual behavior (Finkel and Finkel 1985), whereas other studies have indicated the importance of sexual knowledge for the promotion of healthy sexual behavior (Eisen and Zellman 1986).

Sexual knowledge is a key component of some theoretical models of sexual behavior. For example, the Information-Motivation-Behavioral Skills Model (Fisher and Fisher 1992) states that knowledge is a requirement for healthy sexual behavior; the Health Belief Model argues that awareness of personal risk or vulnerability is crucial for the adoption of healthier behavior (Rosentock, 1966); the Theory of Reasoned Action (Ajzen and Fishbein 1980) highlights the role of knowledge in explaining behavioral intention; the Precede-Proceed Model (Green and Kreuter 1999) considers knowledge as one of the most relevant factors in behavioral predisposition; and finally, Bronfenbrenner's (1989) Ecological Systems Theory postulates that development and well-being are evolving functions of person-environment interaction, which offers a useful framework for understanding the sociocultural importance of sexual knowledge and gendered education.

The role of sexual knowledge in sex education

Sexual knowledge is necessary but not sufficient to ensure safe sexual behavior: adolescents need to have access to and understand accurate information about sexuality adapted to their cultural context and they must be empowered to use such information, along with their skills, to protect themselves from risks (Salam et al. 2016). The lack of appropriate sexual knowledge has been detected in other countries (Kontula 2010; Reis et al. 2011). For example, in their review of several European studies, Samkange-Zeeb, Spallek, and Zeeb (2011) confirm the lack of knowledge regarding sexually transmitted diseases (STDs) among adolescents. However, other authors claim that adolescents' deepest sexual knowledge concerns sexual health, mainly the prevention of the human immunodeficiency virus (HIV) and of unwanted pregnancies (Kumar et al. 2013). This is presumably related to the intense effort that has been made to raise worldwide awareness on this issue for decades (Samkange-Zeeb, Spallek, and Zeeb 2011).

To date, few studies have analyzed adolescents' sexual knowledge, especially related to those areas of sexuality beyond simply preventing sexual risk factors (Cordón-Colchón 2008). Accordingly, we need to determine adolescents' knowledge of sexuality in a broader sense, including their knowledge and understanding of the promotion of their own personal and social well-being, given that sexuality ought to be recognized as a holistic facet of human identity and health (Lameiras-Fernández and Carrera-Fernández 2009) which needs cultivation both within family and school settings.

Sex education is rarely present in Spanish education curricula, which relegates sex education to the family context, where talking about sexual topics is still considered taboo (Martínez-Álvarez et al. 2013). In addition, sex education is often viewed as a sign of eroded societal values and norms and thus are not welcomed by traditional societies whose roles for men and women are clearly delineated (Fisseha, David, and Derege 1997), as in the case of Spain. As a result, educational opportunities about sexuality are biased by personal and nonprofessional views.

These gaps were the main motivation for conducting this study. Through this research, we expect to determine Spanish adolescents' knowledge about the different dimensions of human sexuality, and not solely their knowledge about sexual risk factors. Sex education should not only be focused on preventing sexual diseases or unwanted pregnancies, but also on an individual's optimal and integral development (Hurtado et al. 2012). Such development includes the following aspects: knowledge, acceptance, and adaptation both of the physical and sexual aspects of one's body; identification, interpretation, and expression of different kinds of social and sexual affection; knowledge about how to interact sexually with others (e.g. romantic partner); respect for diverse sexual identities; recognition of the importance of sexuality in the social context; identification of gender stereotypes and heteronormativity; constructively coping with conflicts in intimate relationships (e.g. romantic relationship); and an understanding of sexual behavior from the ethics of care and respect (Muñoz and Ulate 2012). Therefore, the goal of this work is to make adolescents' affective-sexual development more satisfying, authentic, positive, and healthy.

Gender differences in sexual knowledge

It is important to extend our understanding of gender differences within the scope of sexual knowledge: educational programs and studies should take into account the existence of such differences. In this regard, many gender differences are related to differential socialization processes for men and women, which shows the importance of considering sociocultural factors when analyzing such differences (Li et al. 2017). In western societies, previous studies of adolescents and youth have found that whilst men tend to have more thorough knowledge of sexual behavior (Ganczak et al. 2005), women usually know more about other areas of sexuality, especially those related to the biology of sexuality, such as anatomy and reproductive physiology (Drennan, Hyde, and Howlett 2009). Nonetheless, it seems that gender differences in sexual knowledge are decreasing progressively (Fisher et al. 1988), even in dimensions where gender differences have traditionally been considerable (e.g. affection and sexual behavior). This is probably due in part to feminist activism and the subsequent sexual liberation of women (Edwards 2016; López et al. 2011).

In Spain, there are few studies analyzing gender and differences in levels of sex education. The research by López et al. (2011) is an exception: it acknowledges gender differences in sexual behaviors and feelings, both in prepuberty and late adolescence, finding minor gender differences in late adolescence (higher secondary education levels). Regarding age-based comparisons, as they grow older, adolescents' become progressively more aware of sexual issues and acquire more specific information (Halcón et al. 2003). In this sense, gender socialization in developmental contexts was found to extend adolescents' knowledge (Davies 1989).

The present study will expand upon previous work in two ways. First, it will analyze adolescent sexual knowledge in multiple domains using a questionnaire which addresses all the major topics related to sexuality. Second, unlike most previous studies, it will study both differences between genders and level of education as regarding sexual knowledge among a broad sample of adolescents. Consequently, two main goals will guide this work: (1) to describe Spanish adolescents' sexual knowledge and myths about different dimensions of sexuality; and (2) to analyze possible differences in sexual knowledge as a function of participants' gender and level of education. In view of the findings mentioned above, students' knowledge of anatomy, sexual physiology, and sexual health is expected to be greater than their knowledge of other areas such as sexual behavior, human sexual response, or sexual identity. Moreover, upper-secondary students are expected to have more extensive sexual knowledge than lower-secondary students, and women are predicted to have a deeper level of understanding of sexual health than men.

Method

Participants

Fifty-six coed secondary schools in Castile and Leon (Spain) were randomly selected, of which 48 were public and 8 private, 24 rural and 32 urban. Eighteen secondary schools (32.1%) declined to collaborate (11 public and 7 private; 3 rural and 15 urban), due to lack of time, or the anticipation of complaints from families. The sample was formed by individuals from eight of the nine provinces of Castile and Leon; and although they were invited to participate, no secondary schools from the province of Soria took part in this study.

A total of 3853 adolescents from 38 secondary schools participated in this study, 1,907 men and 1,943 women, aged 12–18 ($M = 14.40$, $SD = 1.44$). Regarding sexual identity, 3.7% of participants self-identified as nonheterosexual.

Instruments

Sexual knowledge questionnaire

A questionnaire designed to study adolescents' depth of knowledge of different areas of sexuality was developed using the items that compose the Sexual Knowledge Test for Adolescents (SKTA; Kontula, 2010). In addition, a second group of items was taken from different Spanish sex education programs for adolescents (Lameiras-Fernández and Carrera-Fernández 2009). Lastly, a third group of ad hoc items was designed in accordance with the main topics defined in the Standards for Sexuality Education in Europe (WHO 2010), grouped by ages 12–15, and 15 and older. Thus, an initial questionnaire of 60 items was developed.

Subsequently, the reliability and validity of the questionnaire were ensured by means of the Delphi technique: four independent experts evaluated the theoretical structure of the questionnaire (e.g. dimensions of sexuality) and guaranteed the content validity of each item while considering the aims of the study along with the social, cultural, and educational contexts of Spain (Hsu and Sandford 2007).

The experts participating in the Delphi technique were professionals and researchers with vast expertise in sexuality and adolescent prevention and promotion programs. Three main iterations were needed to reach a consensus among the experts. The first round was aimed at reviewing the scope of the subjects, the second at improving the items and choosing those that were the most appropriate, and the last at incorporating general changes to the questionnaire (e.g. instructions, order of items, etc.). The experts were initially sent an e-mail containing a description of the aims of the study, the Delphi process, and its respective deadline (three weeks). Upon agreeing to collaborate, the experts received the questionnaire and the instructions for the first task to be performed. In the following rounds, the experts were provided with anonymous information of the results of the previous rounds and the new tasks that were to be carried out.

Following this procedure, 32 items were selected, all of which measure sexual knowledge rather than attitudes or opinions. The final questionnaire consisted of six dimensions of sexual knowledge: Anatomy and sexual physiology (8 items; e.g. 'During her menstrual cycle, when is it easiest for a woman to become pregnant?'); Sexual health (8 items; e.g. 'HIV can be transmitted through ...'); Sexual behavior and human sexual response (6 items; e.g. 'Masturbation is ...'); Affection and sexuality (3 items; e.g. 'Jealousy in a romantic relationship is usually a sign of ...'); Sexual identity (3 items; e.g. 'Bisexual people ...'); and Sexuality and society (4 items; e.g. 'Sexual harassment includes ...'). Four possible response options were provided (ranging from 'a' to 'd') with just one correct response (i.e. either the only correct option or the most complete one). Correct responses were coded with '1' and incorrect responses with '0', according to the procedure used by Kontula (2010). All responses were then summed to obtain a sexual knowledge score for each dimension.

Following Gadermann, Guhn and Zumbo's (2012) recommendations, a tetrachoric correlation-based version of the omega reliability coefficient was utilized. Omega coefficients were calculated for the total scale ($\omega = .89$) and for each subscale ($\omega = .63$ for Anatomy and sexual physiology; $\omega = .73$ for Sexual health; $\omega = .81$ for Sexual behavior and human sexual response; $\omega = .50$ for Affection and sexuality; $\omega = .83$ for Sexual identity; and $\omega = .60$ for Sexuality and society).

Procedure

Secondary schools whose headmaster had agreed to participate in the study were contacted. The questionnaire was then sent with a consent form requesting parents' permission for their children's participation in the study and the explanation of the nature and main characteristics of the study. Once authorization had been collected, the date for the application of the questionnaires was set. Data collection was always carried out by at least one member of the research team, and teachers were not present during its administration.

At the beginning of each testing session, participants were reminded of the aim of the study, and the instrument was explained. Participants' anonymity and confidentiality was ensured. Participants were informed that they could refuse to participate or could withdraw from the study at any time.

Participants had to complete the questionnaire individually and in silence: any questions were answered at the end of the session. Adolescents who had not received parental consent, those who refused to participate, or those who withdrew from the study were asked to work quietly in the same room. About 35 min were needed to complete the questionnaire. Participants were debriefed after they had completed the entire survey. They were provided with different means to contact members of the research team if they so wished.

Design and data analyses

This exploratory and descriptive study used a cross-sectional design. All statistical analyses were performed with the SPSS v.21. Due to the large sample size, a significant level of $p = .01$ was utilized, and the effect size was also taken into consideration. R software v.3.3.2 was used to calculate the omega reliability coefficient.

An ANOVA with two between-subject factors, namely Gender (men vs. women) and Secondary education level (1st and 2nd grades vs. 3rd and 4th grades) was performed on the total scale scores to determine main and interaction effects.

Next, group differences (gender and secondary education level) across all the sexual knowledge dimensions were tested. Due to the different number of items in each dimension, the proportion of correct responses was calculated for each dimension by dividing the individual's score by the maximum possible score in each one of the dimensions.

A mixed ANOVA was performed with two between-subject factors (gender and secondary education level) and a within-subject factor (each dimension of sexual knowledge). Post-hoc Bonferroni tests were then used to analyze the identified differences among the dimensions along with the interactions.

Finally, to determine adolescents' more specific knowledge concerning the different dimensions of sexuality, we calculated the proportion of participants who had chosen each alternative response to each item. We considered which incorrect alternatives had been chosen by a higher percentage of participants, or those in which at least one of the incorrect alternatives had been chosen by over 20% of the participants.

Results

Significant gender effects [$F(1, 3080) = 54.99, p < .001; \eta^2 = .02$] and a gender*dimension of sexual knowledge interaction [$F(5, 15,400) = 9.48, p < .001; \eta^2 = .003$] were observed (Table 1). As can be seen in Figure 1, the percentage of correct responses was higher for women than for men except for Sexual health. However, the effect size of the identified differences was low.

As expected, the upper-secondary students presented higher levels of sexual knowledge than the lower-secondary ones [$F(1, 3080) = 596.99, p < .001; \eta^2 = .16$]. The secondary education level*dimension of sexual knowledge interaction was also significant [$F(5, 15,400) = 52.99, p < .001; \eta^2 = .02$]. The main differences were found in the dimensions

Table 1. Means, standard deviations and sample size for each dimension of sexual knowledge by Gender and Secondary education level.

	Education level (Secondary)	Gender	M	SD	N
Anatomy and sexual physiology	Lower	Men	.44	.17	649
	Upper		.56	.19	820
	Total		.50	.19	1469
IDI: $\geq .37$ and $\leq .78$ (8 items)	Lower	Women	.46	.18	706
	Upper		.61	.19	909
	Total		.54	.20	1615
Sexual health	Lower	Total	.45	.18	1355
	Upper		.58	.19	1729
	Total		.52	.20	3084
IDI: $\geq .47$ and $\leq .83$ (8 items)	Lower	Men	.52	.19	649
	Upper		.70	.18	820
	Total		.62	.20	1469
Sexual behavior and human sexual response	Lower	Women	.52	.19	706
	Upper		.69	.18	909
	Total		.61	.20	1615
IDI: $\geq .38$ and $\leq .82$ (6 items)	Lower	Total	.52	.19	1355
	Upper		.69	.18	1729
	Total		.62	.20	3084
Affection and sexuality	Lower	Men	.49	.23	649
	Upper		.68	.23	820
	Total		.60	.25	1469
IDI: $\geq .43$ and $\leq .84$ (3 items)	Lower	Women	.52	.24	706
	Upper		.74	.22	909
	Total		.65	.25	1615
Sexual identity	Lower	Total	.51	.23	1355
	Upper		.71	.23	1729
	Total		.62	.25	3084
IDI: $\geq .68$ and $\leq .88$ (3 items)	Lower	Men	.65	.28	649
	Upper		.71	.26	820
	Total		.69	.27	1469
Sexuality and society	Lower	Women	.70	.28	706
	Upper		.78	.25	909
	Total		.75	.26	1615
Sexual identity	Lower	Total	.68	.28	1355
	Upper		.75	.26	1729
	Total		.72	.27	3084
IDI: $\geq .68$ and $\leq .88$ (3 items)	Lower	Men	.77	.27	649
	Upper		.84	.24	820
	Total		.81	.26	1469
Sexuality and society	Lower	Women	.81	.26	706
	Upper		.91	.19	909
	Total		.86	.23	1615
Sexuality and society	Lower	Total	.79	.27	1355
	Upper		.88	.22	1729
	Total		.84	.25	3084
Sexuality and society	Lower	Men	.39	.25	649
	Upper		.48	.27	820
	Total		.44	.26	1469
IDI: $\geq .37$ and $\leq .79$ (4 items)	Lower	Women	.43	.25	706
	Upper		.53	.24	909
	Total		.49	.25	1615
Sexuality and society	Lower	Total	.41	.25	1355
	Upper		.51	.25	1729
	Total		.47	.26	3084

Note: IDI = Item Difficulty Index.

of Anatomy and sexual physiology, Sexual health, and especially Sexual behavior and human sexual response (Figure 2). These differences were not notable, given the effect size.

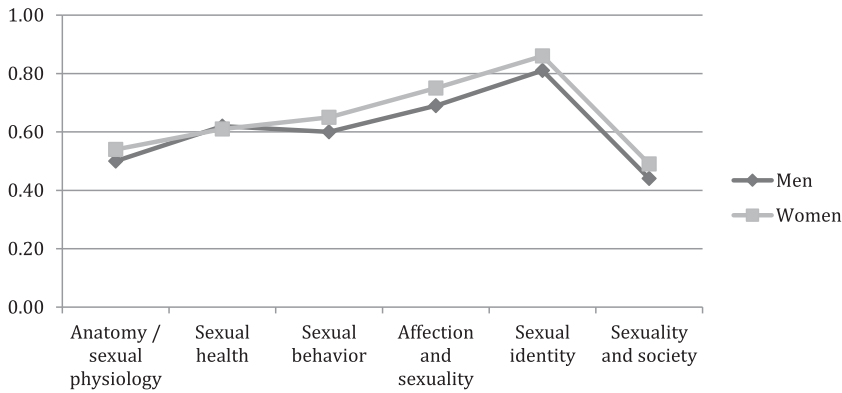


Figure 1. Proportions of correct answers to each dimension of sexual knowledge by men and women.

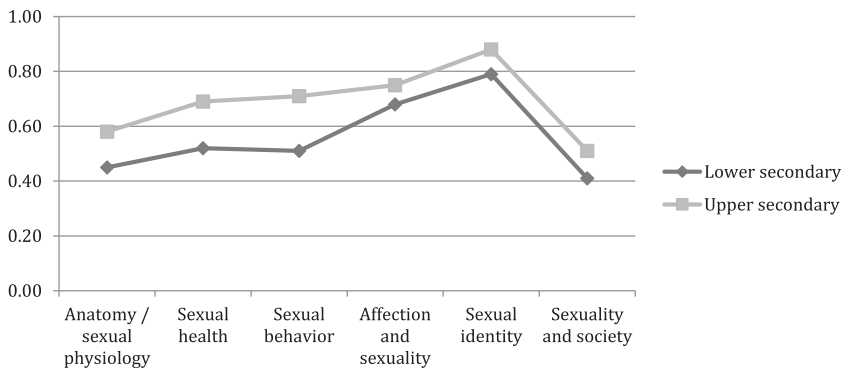


Figure 2. Proportions of correct answers to each dimension of sexual knowledge by lower and upper-secondary education participants.

The interactions gender*secondary education level [$F(1, 3080) = 3.05, p = .08$] and gender*secondary education level*dimension of sexual knowledge [$F(5, 15,400) = 0.75, p = .58$] were not statistically significant. Thus, differences between men and women across the dimensions of sexual knowledge showed the same pattern for both secondary education levels.

Lastly, the items of each dimension were individually analyzed. Taking into account the educational implications of this data, we have only focused on the most common myths at these particular ages.

Anatomy and sexual physiology

Incorrect responses about the parts of the woman reproductive system were found, especially at the lower-secondary level (Table 2). For example, some participants thought that women only have one ovary or that the bladder or the pancreas are part of the woman’s reproductive system (Item 6, responses a, b and d). Moreover, about 50% of the lower and upper-secondary students considered that the hymen is ‘a

Table 2. Percentages of participants who selected each option for Anatomy and sexual physiology items.

Item Correct answer	Education level (Secondary)	Gender	Answer options			
			a	b	c	d
1. Physical changes in adolescence appear ... <i>b) With the onset of puberty, although at different ages of each individual.</i>	Lower	M	1.6	69.7	24.7	4.1
		W	0.5	74.6	21.6	3.3
	Upper	M	0.7	80.4	17.3	1.6
		W	0	82.7	15.2	2.1
2. A boy's nocturnal emissions ('wet dreams') is ... <i>c) A normal part of growing up.</i>	Lower	M	12.6	13.5	69.9	4.1
		W	8.2	14.6	74.7	2.5
	Upper	M	6.9	8.8	80.2	4.1
		W	3.3	8.0	87.6	1.1
3. What is the menstrual cycle? <i>c) It is the time from the first day of one menstruation to the first day of the next.</i>	Lower	M	3.8	21.4	52.8	21.9
		W	0.4	18.6	51.7	29.4
	Upper	M	1.0	11.5	56.9	30.4
		W	0.4	4.8	64.3	30.5
4. When during her menstrual cycle is it easiest for a woman to become pregnant? <i>d) In the middle of the menstrual cycle, with the ovulation.</i>	Lower	M	30.4	29.8	24.2	15.5
		W	27.7	29.7	22.7	19.9
	Upper	M	31.0	15.3	23.4	30.3
		W	32.9	13.2	18.1	35.8
5. The men's genitalia are made up of ... <i>b) The penis, the urethra and the scrotum (testicles).</i>	Lower	M	3.1	38.9	42.0	16.0
		W	1.4	35.0	47.1	16.5
	Upper	M	1.4	42.0	39.9	16.7
		W	1.4	37.2	44.8	16.7
6. Women's genitalia are made up of ... <i>c) The vulva, the vagina, the uterus, two fallopian tubes and two ovaries.</i>	Lower	M	19.7	4.2	59.2	16.9
		W	11.9	1.8	68.5	17.9
	Upper	M	8.7	1.7	83.1	6.6
		W	5.5	0.6	85.1	8.7
27. The hymen is situated inside the vagina. <i>c) It is a fold of mucous membrane whose size and shape vary greatly among girls.</i>	Lower	M	11.3	46.9	22.1	19.6
		W	10.2	48.5	25.0	15.6
	Upper	M	6.2	56.9	19.1	17.6
		W	6.2	54.4	27.3	12.1
28. The clitoris is ... <i>c) A small protuberance located at the top of the inner lips.</i>	Lower	M	31.9	11.0	32.0	25.0
		W	29.6	7.2	38.6	24.6
	Upper	M	15.8	2.7	67.1	14.4
		W	13.2	1.5	39.8	15.5

Note: Correct answer.

membrane that closes the opening of the vagina' or that 'its absence means that a girl has had sexual intercourse' (Item 27, responses a and b).

Sexual health

Concerning the items related to the prevention of sexual risks (Table 3), a significant group of adolescents from the lower-secondary level stated that the families, or only girls or only boys are responsible for the prevention of STDs and unwanted pregnancies (Item 7, responses a, b and c). Participants also showed doubts about possible means of HIV transmission or risk practices (e.g. Item 9). In addition, more than 40% of the participants stated that sexual abuse 'always occurs with the use of physical violence' (Item 31, response a): a higher percentage of lower-secondary participants chose this response rather than the correct response ('is an expression of abuse of power', response b). Finally, with respect to contraception, about 30% of the lower-secondary students considered the response 'it is necessary to leave some empty space for the spermatozoa at the tip of the condom' to be false (Item 29, response a).

Table 3. Percentages of participants who selected each answer for Sexual health items.

Item Correct answer	Education level (Secondary)	Gender	Answer options			
			a	b	c	d
7. Who is responsible for the prevention of STIs and unintended pregnancies in adolescence? <i>d) Both boys and girls involved in sexual intercourse.</i>	Lower	M	17.8	12.9	9.8	59.5
		W	10.5	12.8	6.4	70.3
	Upper	M	7.0	6.0	3.8	83.2
8. Which of the following methods is the most reliable way to prevent STIs and unintended pregnancies? <i>b) The condom.</i>	Lower	M	7.1	86.8	2.0	4.1
		W	7.6	87.3	1.5	3.2
	Upper	M	2.6	93.4	1.4	2.6
9. HIV can be transmitted through ... <i>b) Semen, blood other body fluids.</i>	Lower	M	3.2	42.9	5.7	48.3
		W	2.6	36.7	2.6	58.1
	Upper	M	1.9	57.2	1.8	39.0
10. Regarding HIV, a sexual risk behavior can be ... <i>c) Oral sex (sucking, licking, or kissing the penis or the vulva).</i>	Lower	M	4.4	36.5	5.3	8.9
		W	5.3	44.9	4.5	4.8
	Upper	M	3.2	35.3	57.9	3.6
11. An example of sexual abuse is ... <i>b) When an adult forces a minor to have sex with him or her.</i>	Lower	M	2.6	90.8	2.3	4.3
		W	0.7	92.0	1.1	6.2
	Upper	M	0.4	94.8	0.9	3.9
29. Which of the following statements about condom use is incorrect? <i>d) The right time to put it on is during sex, just before ejaculation.</i>	Lower	M	27.3	9.5	22.2	41.0
		W	39.1	7.8	20.8	32.3
	Upper	M	10.6	4.7	11.2	73.5
30. Morning-after pills should be taken ... <i>c) As soon as possible: at the latest, 72 h after unprotected sex.</i>	Lower	M	11.6	5.6	36.8	46.1
		W	10.3	2.9	43.3	43.5
	Upper	M	4.9	2.3	59.8	33.0
31. Sexual abuse always ... <i>b) Is an expression of abuse of power.</i>	Lower	M	48.9	28.9	1.6	20.6
		W	43.5	31.2	1.0	24.2
	Upper	M	41.6	48.3	1.5	8.6
		W	43.6	44.8	0.6	11.0

Note: Correct answer.

Sexual behavior and human sexual response

Masturbation was considered to be ‘an exclusive sexual practice of boys’ by about 30% of lower-secondary men and ‘harmful for adolescent sexual development’ by over 20% of the women of the same education level (Table 4; Item 12, responses a and c). It was also surprising that approximately 11% of the lower-education participants and about 8% of the upper-secondary ones thought that it is acceptable to touch and caress other people simply because you want to (Item 14, response a). Likewise, about 20% of the lower-secondary participants answered that ‘if a woman does not reach orgasm during sexual intercourse, she cannot get pregnant’ (Item 16, response a). Furthermore, around 15% of the lower-secondary students responded that a woman can have an orgasm ‘only when the man ejaculates during sexual intercourse’ (Item 32, response a).

Affection and sexuality

Table 5 shows that jealousy in a romantic relationship was considered to be a sign of ‘true love’ by approximately 28% of the lower-secondary students and by about 18% of the upper-secondary students (Item 17, response b). This lack of knowledge was comparable in both genders. Also, about 5% answered that being in love ‘only occurs between men

Table 4. Percentages of participants who selected each answer for Sexual behavior and human sexual response.

Item Correct answer	Education level (Secondary)	Gender	Answer options			
			a	b	c	d
12. Masturbation is ... <i>b) A way to get to know oneself (e.g. body sensations).</i>	Lower	M	29.6	45.0	12.5	12.8
		W	24.5	49.1	20.4	6.0
	Upper	M	10.2	72.9	5.4	11.6
		W	10.0	76.0	8.9	5.1
13. Masturbation is a sexual activity ... <i>d) experienced by men and women of all ages.</i>	Lower	M	10.4	14.3	13.5	61.8
		W	5.7	10.2	10.9	73.2
	Upper	M	4.2	8.2	10.9	76.8
		W	1.4	4.0	8.0	86.5
14. Many young people would like to touch and caress other people. This is OK if ... <i>c) all people involved want to.</i>	Lower	M	13.3	5.4	78.4	2.9
		W	9.4	5.4	81.8	3.5
	Upper	M	9.0	2.1	87.5	1.4
		W	7.1	2.1	90.5	0.3
15. Which of the following statements about first intercourse is correct? <i>c) Some women bleed after having sex, while others don't.</i>	Lower	M	12.6	57.0	13.5	16.9
		W	12.0	58.9	20.0	9.1
	Upper	M	4.2	55.6	35.0	5.3
		W	2.2	42.5	54.5	0.7
16. Which of the following statements is correct? <i>c) Penis size is not the most important factor regarding the ability to satisfy a partner.</i>	Lower	M	21.7	30.4	44.4	3.6
		W	19.2	27.9	49.0	3.9
	Upper	M	6.7	29.4	61.8	2.1
		W	5.2	25.2	68.7	0.9
32. How can women have orgasms (pleasure caused by sexual climax)? <i>d) They can reach orgasms through all previous forms as well as masturbation.</i>	Lower	M	14.8	12.0	6.8	66.5
		W	16.7	9.4	4.9	69.0
	Upper	M	3.7	7.2	2.9	86.3
		W	5.5	5.2	4.2	85.1

Note. Correct answer.

Table 5. Percentages of participants who selected each answer for items regarding Affection and sexuality

Item Correct answer	Education level (Secondary)	Gender	Answer options			
			a	b	c	d
17. Jealousy in a romantic relationship is usually a sign of ... <i>a) Insecurity, fear of loss.</i>	Lower	M	64.9	28.7	2.3	4.1
		W	65.5	28.4	2.1	4.0
	Upper	M	74.1	19.7	2.2	3.9
		W	77.0	17.2	2.0	3.8
18. Falling in love ... <i>c) Happens to people of all ages.</i>	Lower	M	9.0	2.2	81.4	7.4
		W	6.6	5.3	84.5	3.6
	Upper	M	5.9	3.0	85.6	5.5
		W	3.7	4.0	89.3	3.0
19. Which of the following reaction is atypical of a person in love? <i>b) The feeling that the spent time with the loved one goes very slowly.</i>	Lower	M	26.0	49.3	6.4	18.3
		W	19.0	61.2	3.3	16.5
	Upper	M	19.7	56.6	5.4	18.3
		W	13.4	70.4	2.3	13.9

Note: Correct answer.

and women' (Item 18, response d). This erroneous concept is not only related to the myth of romantic love, but also to coercion and homophobia (Kontula 2010; Pichardo 2007).

Sexual identity

In relation to Sexual identity (Table 6), about 11% of the men considered homosexuality to be 'an illness that requires medical and/or psychological treatment' (Item 21, response a), and about 10% of the men answered that homosexuality is 'a vice that has increased in the

Table 6. Percentages of participants who selected each answer for Sexual identity items.

Item Correct answer	Education level (Secondary)	Gender	Answer options			
			a	b	c	d
20. A person who feels romantic and sexual attraction to members of the same sex ... <i>c) Is a homosexual.</i>	Lower	M	10.0	3.0	83.9	3.0
		W	12.0	3.6	82.2	2.3
	Upper	M	4.6	0.6	93.4	1.4
		W	6.8	1.4	90.4	1.4
21. Nowadays homosexuality is considered ... <i>d) A normal sexual orientation instead of a sexual deviation.</i>	Lower	M	10.9	7.8	12.3	69.0
		W	4.8	6.0	8.3	81.0
	Upper	M	11.0	2.8	7.5	78.7
		W	2.5	2.2	4.2	91.2
22. Bisexual people ... <i>c) Have romantic feelings and sexual attraction towards men and women.</i>	Lower	M	4.4	3.2	76.6	15.9
		W	1.4	0.9	85.2	12.5
	Upper	M	4.4	1.0	81.9	12.8
		W	1.1	1.2	91.1	6.6

Note. Correct answer.

last years' (Item 21, response c). Thus, nonheterosexual sexualities are considered problematic and are stigmatized (Rich 2003). In addition, over 14% of the lower-secondary participants and 10% of the upper-secondary ones stated that bisexual people 'do not know what they want' (Item 22, response d).

Sexuality and society

Table 7 shows that about half of lower-secondary participants and about 40% of the upper-secondary ones did not consider sexual harassment to include all the following components: 'pressuring someone to have sex', 'crude and rude talk', and/or 'touching the private parts of another person without consent' (Item 23, responses a, b and c). Regarding the promotion of gender equality, more than 22% of the lower-secondary men answered that nothing needs to be done 'because there already is gender equality' (response c). Finally, about 25% of both secondary levels answered 'the laws regarding

Table 7. Percentages of participants who selected each answer for items regarding Sexuality and society.

Item Correct answer	Education level (Secondary)	Gender	Answer options			
			a	b	c	d
23. Sexual harassment includes ... <i>d) All previous answers are correct.</i>	Lower	M	6.5	31.0	17.6	44.8
		W	3.5	34.0	10.8	51.8
	Upper	M	3.8	27.0	13.6	55.6
		W	3.3	25.7	8.7	62.3
24. Gender roles are ... <i>d) All previous answers are correct.</i>	Lower	M	38.2	22.9	19.2	19.7
		W	38.1	19.6	20.6	21.7
	Upper	M	30.2	20.7	13.2	35.9
		W	25.6	19.2	14.7	40.5
25. Something important to promote gender equality is ... <i>d) That boys and girls can feel free to adopt characteristics of both gender roles.</i>	Lower	M	6.4	6.2	22.1	65.3
		W	3.4	3.0	17.1	76.5
	Upper	M	4.8	31.1	16.1	76.0
		W	0.6	1.1	6.3	92.0
26. In our society, laws about sexuality and gender ... <i>a) Regulate what is and is not permitted.</i>	Lower	M	37.1	26.5	8.5	27.8
		W	36.1	24.0	4.3	35.6
	Upper	M	32.5	25.1	8.7	33.8
		W	25.3	23.7	7.0	43.9

Note: Correct answer.

sexuality are not respected by anyone because each person is free to do whatever they want' (Item 26, response b).

Discussion

The main results of this work highlight the following: first, myths and misinformation regarding sexuality seem to be common at this stage. Second, regarding the dimensions of sexuality analyzed in this paper, participants have better knowledge of sexual identity than of sexuality and society, or of anatomy and sexual physiology. Third, sexual knowledge is significantly better at the upper-secondary level than at the lower-secondary one. And fourth, although in general women show more comprehensive knowledge than men, the effect size of gender was small. These results are discussed below.

In Spain, the October 3rd Organic Law 1/1990 on the General Organization of the Education System (LOGSE, for its acronym in Spanish) proposed a cross-curricular treatment of several educational contents, including the affective-sexual area (Martínez-Álvarez et al. 2012). Thus, sex education did not have a specific place in the school curriculum and its contents have not been as thorough as would have been desirable (Martínez-Álvarez et al. 2011). As Beaumont, Maguire, and Schulze (2013) stated, in Spain 'the quality of school-based sexuality education only depends on the person who is providing it and is not based on legal or legislative matters'; consequently, 'the quality of the provision is not always efficient' (p. 30). In addition, lack of appropriate teacher training in sex education could be one of the reasons why affective-sexual education is not working adequately in many Spanish schools (Martínez-Álvarez et al. 2013), where, regardless of the cause, it presents significant shortcomings (Venegas 2011).

The main goal of most educative actions commonly carried out among adolescents (e.g. workshops, awareness projects, etc.) has been the prevention of sexual risks, such as unwanted pregnancies or STDs (Venegas 2011). Our results suggest that this way of understanding sex education, besides being a reductionist approach, has not been effective thus far (Bermúdez et al. 2010). Further investigation is necessary in order to determine the reasons why educational programs have not been more effective. Moreover, studying adolescents' knowledge is necessary to determine their degree and type of sexual knowledge and to confirm whether or not the work invested in educational programs has been effective. In addition, given that having access to accurate information may help to promote safe sexual behavior, students must be well informed and trained to protect themselves (Salam et al. 2016). In this sense, this research introduces the innovative approach of exploring the knowledge of sexuality in a broader sense rather than maintaining the common practice of focusing exclusively on sexual risks (Martínez-Álvarez et al. 2013). From a professional point of view, knowing how to teach scientific knowledge is crucial. Unless attitudinal and emotional elements are included, straightforward transmission of knowledge may come across as quite sterile. Therefore, the 'knowledge gap versus belief gap' hypothesis (Hindman and Yan 2015) must be considered, in which a certain group of influencers (peers, mass media, etc.) question some scientific knowledge using moral arguments. In Spain, the absence of consensus among professionals both on the content of this topic and the best way to teach that content has influenced groups (political, religious, etc.) that question the necessity of promoting scientific sexual education in schools (Bleakley et al. 2010).

What are the most effective methods used to teach accurate knowledge? The data in this study do not allow us to answer this question fully, but the extent of students' erroneous information has made it clear that being aware of which myths still exist would be helpful in designing effective educational actions. Also remarkable is the fact that students' knowledge is, for the most part, focused on the area of Sexual identity, though it remains far from thorough. According to previous research, Spanish adolescents usually ignore whatever is beyond the boundaries of sexual heteronormativity. Likewise, homophobia seems to be significantly present in secondary schools, which are often a prime location for discrimination (Carrera-Fernández et al. 2013).

To some extent, it is expected that knowledge of sexuality extends as children get older, due partly to the fact that they are more likely to have had access to information and experiences both in formal and informal educational settings. In this regard, some studies have found that the best peers' tutors are those who are significantly more cognitively developed than their tutees. However, the tutoring is ineffective if there is insufficient trust or scaffolding (Tudge and Winterhoff, 1993).

However, this method of educating is not necessarily adequate from a scientific perspective, nor does it promote healthy behavior. Thus, it is necessary to improve our knowledge on the information sources. In addition, we ought to either confirm or refute previous findings regarding peers, mass media, family, and professionals as the main sources of sexual information (Beaumont, Maguire, and Schulze 2013). Future research should address the sources of sexual information accessed by adolescents.

Regarding gender differences in sexual knowledge, our results indicate that women have more thorough knowledge but the effect size of gender is small. At this point, it is difficult to determine whether this apparent convergence in knowledge between men and women should be expected due to the scarcity of research that analyzes sexual knowledge comprehensively in Spain. In any case, some studies show that myths are common among Spanish adolescents, and that this lack of knowledge is difficult to attribute to a single gender (Palenzuela 2006). This finding is consistent with previous research showing the apparent narrowing of gender differences in European adolescents because of feminist activism and the changing attitudes towards women that have been taking place (López et al. 2011). Furthermore, women's movements in western societies have made it easier, faster, and more convenient to access different informal sources of information that to complement or expand formal sexual information (Edwards 2016).

In our opinion, these results show the need to promote high-quality sex education for adolescents. Many people have their first sexual contact with another person in adolescence, with or without penetration (Rodríguez-Carrión and Traverso-Blanco 2012), indicating that myths about human sexuality make it difficult to experience sexuality in a healthy way (Palenzuela 2006). In this sense, adolescents exhibit broader sexual knowledge, healthier attitudes, and safer sexual behavior in countries where sexual education is part of the school curriculum (e.g. France, the Netherlands, Sweden, etc.) (Beaumont, Maguire, and Schulze 2013), instead of being merely understood as a form of prevention of disease and risk (Weaver, Smith, and Kippax 2005).

This study has some limitations worth mentioning. First, additional psychometric studies should be carried out on the instruments used, especially to improve the reliability of some subscales (e.g. adding items) among certain analyzed dimensions. Second, although our work addresses sexual knowledge from a scientific consensus viewpoint, it is highly

related to beliefs and attitudes, especially in the affective and social dimensions of sexuality. Third, the sample is limited to adolescents living in a particular region of Spain (Castile and Leon), and therefore generalization of the results to the whole country should be made cautiously. Finally, the number of participants identifying as nonheterosexual was small, making it impossible to carry out comparative analyses of heterosexual and nonheterosexual adolescents. Future research is needed in order to study adolescents' sexual knowledge more thoroughly, and to overcome the limitations of this research. Studying adolescents' sources of information and the impact that them on their sexual development is another important aspect to be addressed. Research combining a quantitative and qualitative approach should be carried out, which would significantly improve our understanding of adolescent sexuality.

However, this study further clarifies the knowledge about sexuality that adolescents in Castile and Leon (Spain) actually possess. We believe that the findings of this study are important for adolescent well-being: knowing which myths still exist would be helpful in the design of effective educational actions. Similarly, these results allow for the design of political strategies that promote the institutional implementation of programs that view sexuality from a holistic perspective. Our findings could also support the work of psychosocial and health professionals, allowing them to adapt their actions to adolescents' demonstrable needs of sexual knowledge.

Finally, this work promotes self-reflection among adolescents, giving them time to think about what they do and do not know about sexuality. In addition, this work empowers students by involving them in their own sex and health education.

Acknowledgments

The authors would like to thank the authorities of the Autonomous Community of Castile and Leon for supporting this research (REF: SA081A11-1) and Dr. Daniel Perlman (University of Greensboro, USA) for his suggestions to improve the manuscript.

Disclosure statement

No potential conflict of interest was reported by the authors.

Funding

This work was supported by Junta de Castilla y León.

References

- Ajzen, I., and M. Fishbein. 1980. *Understanding Attitudes and Predicting Social Behavior*. Englewood Cliffs, NJ: Prentice Hall.
- Beaumont, K., M. Maguire, and E. Schulze. 2013. *Policies for Sexuality Education in the European Union*. Brussels: European Parliament. Retrieved from [http://www.europarl.europa.eu/RegData/etudes/note/join/2013/462515/IPOL-FEMM_NT\(2013\)462515_EN.pdf](http://www.europarl.europa.eu/RegData/etudes/note/join/2013/462515/IPOL-FEMM_NT(2013)462515_EN.pdf).
- Bermúdez, M. P., A. Castro, J. Madrid, and G. Buela-Casal. 2010. "Análisis de la conducta sexual de adolescentes autóctonos e inmigrantes latinoamericanos en España." *International Journal of Clinical and Health Psychology* 10 (1): 89–103.
- Bleakley, A., M. Hennessy, M. Fishbein, and A. Jordan. 2010. "How Sources of Sexual Information Relate to Adolescents' Beliefs about Sex." *American Journal of Health Behavior* 33 (1): 37–48.

- Bronfenbrenner, U. 1989. "Ecological systems theory." *Annals of Child Development* 6: 187–249.
- Carrera-Fernández, M. V., Y. Rodríguez, M. Lameiras-Fernández, P. Vallejo-Medina, and P. Alonso-Ruido. 2013. "Actitudes hacia la diversidad sexual en estudiantes de secundaria españoles." *Revista Iberoamericana de Salud y Ciudadanía* 12 (2): 110–128.
- Cassar, J. 2015. "Sex and Secrecies: An Exploration of Students' Conceptualizations of Heteronormativity." *Journal of LGBT Youth* 12 (4): 419–435.
- Cole, E. R. 2009. "Intersectionality and research in psychology." *American Psychologist* 64: 170–180.
- Cordón-Colchón, J. 2008. "Mitos y creencias sexuales de una población adolescente de Almendralejo." *Matronas Profesión* 9 (3): 6–12.
- Davies, B. 1989. "Education for Sexism: A Theoretical Analysis of the sex/Gender Bias in Education." *Educational Philosophy and Theory* 21 (1): 1–19.
- Drennan, J., A. Hyde, and E. Howlett. 2009. "Sexual Behaviour and Knowledge among Adolescents in Ireland." *Sexual Health* 6: 245–249.
- Edwards, N. 2016. "Women's Reflections on Formal sex Education and the Advantage of Gaining Informal Sexual Knowledge Through a Feminist Lens." *Sex Education* 16: 266–278.
- Eisen, M., and G. L. Zellman. 1986. "The Role of Health Belief Attitudes, sex Education, and Demographics in Predicting Adolescents' Sexuality Knowledge." *Health Education Quarterly* 13: 9–22.
- Finkel, M. L., and S. Finkel. 1985. "Sex Education in High School." *Society* 23: 48–53.
- Fisher, J., and W. Fisher. 1992. "Changing AIDS Risk Behavior." *Psychological Bulletin* 111: 455–474.
- Fisher, W. A., G. Grenier, W. W. Watters, J. Lamont, M. Cohen, and J. Askwith. 1988. "Students' Sexual Knowledge, Attitudes Toward sex, and Willingness to Treat Sexual Concerns." *Journal of Medical Education* 63: 379–385.
- Fisseha, E., Z. David, and K. Derege. 1997. "The Attitude of Students, Parents, and Teachers Towards the Promotion and Provision of Condoms for Adolescents in Addis Ababa." *Ethiopian Journal of Health Development* 11 (1): 7–16.
- Gadermann, A.M., Guhn, M., and Zumbo, D. 2012. Estimating Ordinal Reliability for Likert-type and Ordinal Item Response Data: A Conceptual, Empirical, and Practical Guide. *Practical Assessment, Research & Evaluation*, 17(3): 1–13.
- Ganczak, M., A. Boron-Kaczmarek, M. Leszczyszyn-Pynka, and Z. Szych. 2005. "Polish Adolescents and their Beliefs and Attitudes to HIV/AIDS and Sexual Relationships." *Sex Education* 5 (1): 1–14.
- García-Vega, E., E. Menéndez, P. García, and R. Rico. 2010. "Influencia del sexo y del género en el comportamiento sexual de una población adolescente." *Psicothema* 22 (4): 606–612.
- Green, L.J., & Kreuter, M.W. (1999). *Health Promotion Planning: An Educational Approach* (3rd ed.). Mountain View, CA: Mayfield Publishing Company.
- Halcón, L., R. Blum, T. Beuhring, E. Pate, S. Campbell-Forrester, and A. Venema. 2003. "Adolescent Health in the Caribbean: A Regional Portrait." *American Journal of Public Health* 93 (11): 1851–1857.
- Hindman, D. B., and C. Yan. 2015. "The Knowledge gap Versus the Belief gap and Abstinence-Only sex Education." *Journal of Health Communication* 20 (8): 949–957.
- Hsu, C. C., and B. A. Sandford. 2007. "The Delphi Technique: Making Sense of Consensus." *Practical Assessment, Research & Evaluation* 12 (10): 1–8.
- Hurtado, F., Pérez, M., Rubio-Aurioles, E., Coates, R., Coleman, E., Corona, E., Mazín, R., and Horno, P. 2012. *Educación para la sexualidad con bases científicas. Documento de consenso de Madrid. Recomendaciones de un grupo internacional de expertos*. Retrieved from http://www.flases.net/boletines/educacion_para_la_sexualidad.pdf.
- Kontula, O. 2010. "The Evolution of sex Education and Students' Sexual Knowledge in Finland in the 2000s." *Sex Education* 10 (4): 373–386.
- Kumar, M., R. Lim, C. Langford, J. Seabrook, M. A. Speechley, and T. Lynch. 2013. "Sexual Knowledge of Canadian Adolescents After Completion of High School Sexual Education Requirements." *Paediatric Children Health* 18 (2): 74–80.
- Lameiras-Fernández, M., and Carrera-Fernández, M.V. 2009. *Educación sexual. De la teoría a la práctica*. Madrid: Pirámide.
- Li, C., Z. Cheng, T. Wu, X. Liang, J. Gaoshan, L. Li, and K. Tang. 2017. "The Relationships of School-based Sexuality Education, Sexual Knowledge and Sexual Behaviors—a Study of 18,000 Chinese College Students." *Reproductive Health* 14 (1): 103–112.

- López, F., R. J. Carcedo, N. Fernández-Rouco, M. I. Blázquez, and A. Kilani. 2011. "Diferencias sexuales en la sexualidad adolescente: afectos y conductas." *Anales de Psicología* 27: 791–799.
- Martínez-Álvarez, J. L., R. J. Carcedo, A. Fuertes, I. Vicario-Molina, A. A. Fernández-Fuertes, and B. Orgaz. 2012. "Sex Education in Spain: Teachers' Views of Obstacles." *Sex Education* 12 (4): 425–436.
- Martínez-Álvarez, J. L., E. González, I. Vicario-Molina, A. A. Fernández-Fuertes, R. J. Carcedo, A. Fuertes, and B. Orgaz. 2013. "Formación del profesorado en educación sexual: pasado, presente y futuro." *Magister* 25: 35–42.
- Martínez-Álvarez, J. L., B. Orgaz, I. Vicario-Molina, E. González, R. J. Carcedo, A. A. Fernández-Fuertes, and A. Fuertes. 2011. "Educación sexual y formación del profesorado en España: diferencias por sexo, edad, etapa educativa y comunidad autónoma." *Magister* 24: 37–47.
- Milligan, M. S., and A. H. Neufeldt. 2001. "The Myth of Asexuality: A Survey of Social and Empirical Evidence." *Sexuality & Disability* 19: 91–109.
- Muñoz, V., and C. Ulate. 2012. *El derecho humano a la educación para la afectividad y la sexualidad integral: contribuciones para una reforma educativa necesaria*. Heredia: Universidad Nacional.
- Palenzuela, A. 2006. "Intereses, conducta sexual y comportamientos de riesgo para la salud sexual de escolares adolescentes participantes en un programa de educación sexual." *Análisis y Modificación de Conducta* 32: 451–496.
- Pichardo, J. I. 2007. *Actitudes ante la diversidad sexual de la población adolescente de Coslada (Madrid) y San Bartolomé de Tirajana (Gran Canaria)*. Madrid: FELTGB and COGAM.
- Reis, M., L. Ramiro, M. G. Matos, J. A. Diniz, and C. Simões. 2011. "Educação sexual, conhecimentos, crenças, atitudes e comportamentos nos adolescentes." *Revista Portuguesa de Saúde Pública* 29 (1): 11–21.
- Rich, A. 2003. "Compulsory Heterosexuality and Lesbian Existence." *Journal of Women's History* 15: 14–48.
- Rodríguez-Carrión, J., and C. I. Traverso-Blanco. 2012. "Conductas sexuales en adolescentes de 12 a 17 años de Andalucía." *Gaceta Sanitaria* 26 (6): 519–524.
- Rosenstock, I. M. 1966. "Why people use health services." *The Milbank Memorial Fund Quarterly* 44: 94–127.
- Salam, R. A., A. Faqqah, N. Sajjad, Z. Lassi, J. Das, M. Kaufman, and Z. Bhutta. 2016. "Improving Adolescent Sexual and Reproductive Health: A Systematic Review of Potential Interventions." *Journal of Adolescent Health* 59 (4): 11–28.
- Samkange-Zeeb, F., L. Spallek, and H. Zeeb. 2011. "Awareness and Knowledge of Sexually Transmitted Diseases (STDs) among School-Going Adolescents in Europe: A Systematic Review of Published Literature." *Public Health* 11 (1): 727.
- Stryker, S. 2008. "Transgender History, Homonormativity, and Disciplinarity." *Radical History Review* 100: 144–157.
- Sturgis, P. J., and N. C. Allum. 2004. "Science in Society: Re-Evaluating the Deficit Model of Public Attitudes." *Public Understanding of Science* 13 (1): 55–74.
- Tolman, D. L., and S. I. McClelland. 2011. "Normative Sexuality Development in Adolescence: A Decade in Review, 2000–2009." *Journal of Research on Adolescence* 21 (1): 242–255.
- Tudge, J. R. H., and P. A. Winterhoff. 1993. "Vygotsky, Piaget, and Bandura: Perspectives on the Relations Between the Social World and Cognitive Development." *Human Development* 36: 61–81.
- Varela, M., and J. Paz. 2010. "Estudio sobre conocimientos y actitudes sexuales en adolescentes y jóvenes." *Revista Internacional de Andrología* 8 (2): 74–80.
- Venegas, M. 2011. "El modelo actual de educación afectivo-sexual en España. El caso de Andalucía." *Revista Iberoamericana de Educación* 55 (3): 1–10.
- Weaver, H., G. Smith, and S. Kippax. 2005. "School-based sex Education Policies and Indicators of Sexual Health among Young People: A Comparison of the Netherlands, France, Australia and the United States." *Sex Education* 5 (2): 171–188.
- WHO (2010). *Standards for sexuality education in Europe: A framework for policy makers, educational and health authorities and specialists*. Cologne, Germany. Retrieved from https://www.oif.ac.at/fileadmin/OEIF/andere_Publikationen/WHO_BZgA_Standards.pdf.

Copyright of Journal of Youth Studies is the property of Routledge and its content may not be copied or emailed to multiple sites or posted to a listserv without the copyright holder's express written permission. However, users may print, download, or email articles for individual use.