



Sexual behaviour in 15-year-old adolescents: insights into the role of family, peer, teacher, and classmate support

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Abstract

Objective. The aim was to investigate the role of different forms of social support in early sexual intercourse and contraceptive use.

Materials and methods. The study sample included 18,918 15-year-olds who took part in the 2018 Italian Health Behaviour in School-aged Children study. Multivariable multilevel logistic regressions were performed taking into account geographical region and socioeconomic status.

Results. 21.7% of adolescents reported early sexual intercourse. 71.9% used a condom at last sexual intercourse, 12.2% oral contraceptives 41.2% other contraceptive methods (multiple response question). High support from family and from teachers were associated with a lower likelihood of early sexual intercourse in both genders, while peer support was shown to increase this likelihood among boys. Adolescents with high social support were more likely to use condoms.

Conclusions. Social support can have a positive influence on adolescents' sexual behaviour. Sexual education programmes should aim to engage peers and those significant adults who can influence adolescents' lives, in and out of school.

Key words

- adolescent health
- sexual health
- sexual behaviour
- social environment

INTRODUCTION

Adolescence is an important life stage during which physical, emotional, social, and biological development influence both physiology and the behavioural transition into adulthood [1]. This period should be considered a moment of a great vulnerability, as, in addition to physiological changes, adolescents experience contrasting emotions, personal conflicts, and social interactions. All of these factors, combined with their exposure to an increasingly demanding environment, increase young people's chances of facing health risks [2]. It is now widely known that the impact of experiences during childhood and adolescence is not limited to these stages of life; it extends to future opportunities

and prospects. Health decisions made at this age may also have important effects later in life [3].

Adolescence is also a period during which sexual maturation and reproductive function become visible. At the 1994 Cairo International Conference, the global community established a policy framework to promote the well-being of adolescents. The World Health Organisation (WHO) claims that positive sexual health is essential to achieving a sustainable development and the realisation of global health and human rights. Age-appropriate sexuality education, both in schools and at the community level, is part of a series of measures recommended by the WHO to promote healthy relationships in adolescents [4]. The theme of adolescent sexuality

has also been the focus of numerous studies, with particular attention paid to its biomedical aspects, e.g., sexual initiation [5, 6], contraception [7], and reproductive and sexual health risks [8]. Indeed, sexual initiation represents a public health issue for several reasons among which being more likely engaging in more sexual partners, different sexual practices and repertoires, together with a higher likelihood of teen pregnancy, and in some situations, be more likely to ever have a sexual transmitted infection, appear to be the most important [9].

Sexual activity in itself is not a risky behaviour, but it is widely recognised as a threat to well-being when it occurs at an early age and without proper knowledge and competences [10]. Early sexual debut is generally defined according to the distribution of age at first sexual intercourse within the community. As such, its definition shifts over time and across countries according to community cultural norms [11]. Early sexual debut can also be defined according to physical and/or emotional immaturity, as a precondition that increases the risk of sexually transmitted infections, unintended pregnancy, and abortion, and affects the social and the psychological sphere [7, 9, 12]. Based on both of these definitions [13], early sexual debut in the US was identified as first sexual intercourse before the age of 16 years; the same definition has also been used in European studies [6, 14-16].

More recently, social support, both formal and informal, has been shown to have a positive connection with the psychophysical health of adolescents. Such support ensures a greater sense of stability and security, and it acts as a buffer against stressful events and risky behaviours, including those related to sexual health, such as early sexual debut [17]. For instance, good relationships with family and teachers have been reported to lead to better mental health, better subjective well-being, and reduced substance use, while relationships with peers have been associated both positively and negatively with the same health issues [18, 19]. To the authors' knowledge, research on the association of social support with early sexual intercourse and condom use in adolescents is still in need of expansion, and particularly among Italian adolescents [20]. Therefore, the aim of this study was to investigate the role of the support of family, peers, teachers and classmates on early sexual intercourse and contraceptive use among 15-year-olds in Italy.

MATERIALS AND METHODS

Study population and design

This paper is based on data from the 2018 Italian Health Behaviour in School-aged Children (HBSC) study. Questions on sexual behaviour were only submitted to 15-year-old students, limiting the analyses on this outcome to a subgroup of the all sampled population (18,918 adolescents). For more information on the study and its methods see *Appendix 1* of the paper by Nardone *et al.*, published in this issue of the *Annali dell'Istituto Superiore di Sanità*.

Geographical region

Italy has 20 regions of different sizes (Trentino Alto Adige is represented with two autonomous provinces), with varying geographical characteristics, economic de-

velopment, civic culture, and institutional performance [21]. The study methods were organized to allow a representative sample of adolescents for each region across the country. In these analyses, regions were grouped into three main areas according to the Italian National Institute of Statistics classification [22]: Northern, Central, and Southern Italy.

Family structure

Family structure was determined by asking adolescents to identify the people who live, most of the time, in the same house in which they live [23]. Adolescents were then classified as "living with both parents" (including stepfather or stepmother) or "not living with both parents" [24] very early sexual initiation (<14 years).

Social support. Family and peer support

Family and peer support were both measured using a multidimensional scale consisting of four items. For family support, the items were: i) "My family really tries to help me"; ii) "I get the emotional help and support I need from my family"; iii) "I can talk about my problems to my family"; and iv) "My family is willing to help me make decisions" [25, 26]. For peer support, the items were: i) "My friends really try to help me"; ii) "I can count on my friends when things go wrong"; iii) "I have friends with whom I can share my joys and sorrows"; and iv) "I can talk about my problems with my friends" [26]. Response options for family and peer support ranged from "very strongly disagree" (1) to "very strongly agree" (7); a sum-score was then calculated for each scale (range 4-28) and divided by four. Missing data for one or more items were coded as missing data for that domain [27]. According to the most recent HBSC International Report, both scores were then dichotomised into low (<5.5) or high (≥5.5) support [26, 28].

Social support. Teacher and classmate support

Teacher support was measured by three items: i) "I feel that my teachers accept me as I am"; ii) "I feel that my teachers care about me as a person"; and iii) "I feel a lot of trust in my teachers" [29]. Similarly, classmate support was measured by three items: i) "The students in my class enjoy being together"; ii) "Most of the students in my class are kind and helpful"; and iii) "Other students accept me as I am" [29]. Response options for teacher and classmate support ranged from "strongly agree" (1) to "strongly disagree" (5). Original codes were reversed: strongly disagree (0) to strongly agree (4), and a sum-score was generated for each scale (range 0-12) and then divided by three. Missing data for one or more items were encoded as missing data for that domain. Both of the final scores were classified as low (<2.5) or high (≥2.5) support [27, 29].

Sexual intercourse

Fifteen-year-olds were asked "Have you ever had sexual intercourse (sometimes this is called making love, having sex, or going all the way)?" [26, 30]. Response options were "yes" and "no". Students who replied yes were categorised as having had early sexual intercourse.

Contraceptive methods

Those who reported early sexual intercourse were also asked about the contraceptive methods used at last sexual intercourse: "The last time you had sexual intercourse, did you or your partner use": "a condom", "birth control pill", "withdrawal" and "other methods" [30]. Response options for each contraceptive method were "yes", "no", and "not sure". The latter two options were grouped.

Statistical analysis

Descriptive analyses and comparisons between genders by geographical region, socioeconomic status, and social support were performed by the corrected weighted Pearson Chi square statistic. Due to the hierarchical structure of the data, a set of multilevel logistic regression analyses was performed, using school as the level. These analyses were performed to study the associations between social support and early sexual intercourse, condom use, and oral contraceptive use separately for boys and girls. All models were adjusted for geographical region and socioeconomic status. Results were reported as odds ratios (ORs) with 95% confidence intervals (CIs). All analyses were performed using STATA software 14.1 (Stata Corp LP, College Station, TX, USA) and a two-tailed p value <0.05 was considered significant. Missing values (7.3% in sexual intercourse and 2.2% in condom use) were excluded by pairwise deletion in descriptive analyses and by list wise deletion in regressions.

RESULTS

Girls were approximately half (9,506; 50.2%) of the study sample, and 46.4% of 15-year-olds were from Northern Italy, 18.4% from Central and 35.2% from Southern Italy. Nearly the half of them reported a medium socioeconomic status (49.9%), and nearly the 80% lived with both parents. The majority of 15-year-olds reported high family support (67.5%), high peer support (64.5%), and high classmate support (69.9%), while 47.3% reported high teacher support (Table 1). Boys reported higher family, teacher, and classmate support, while girls reported higher peer support when compared to boys ($p < 0.001$ for all these relationships).

The 21.7% of adolescents reported early sexual intercourse, among these the 8.4% had declared their initiation before the age of 15. Comparative analyses showed overlapping results with those who reported having had their first intercourse before and at 15 years of age (data not shown).

Among adolescents who reported sexual intercourses, the contraceptive method most commonly used in their last sexual intercourse was condom (71.9%), followed by other methods (41.2%, of which 38.6% declared to have used withdrawal and 2.6% other methods) and oral contraceptives (12.2%), finally the 4.7% reported not having used any contraceptive. Boys were significantly more likely to use condom than girls (74.3% vs 68.9%) and girls to use other contraceptive methods (36.0% vs 47.7%).

Boys from Central and Southern Italy showed higher odds ratios of sexual intercourse (OR 1.55, 95% CI

1.26-1.90; OR 2.35, 95% CI 2.00-2.78, respectively), see Table 2. The same was observed for boys with high socioeconomic status (OR 1.56, 95% CI 1.33-1.83). Living with both parents showed a lower probability of sexual intercourse in both genders (OR 0.79, 95% CI 0.69-0.90 in boys; OR 0.65, 95% CI 0.57-0.74 in girls), as did high family support (OR 0.84, 95% CI 0.75-0.95 for boys; OR 0.55, 95% CI 0.49-0.62 for girls) and high teacher support (OR 0.74, 95% CI 0.66-0.82 in boys; OR 0.64, 95% CI 0.57-0.72 in girls). High peer support was positively associated with higher odds of sexual intercourse only in boys (OR 1.47, 95% CI 1.31-1.65). Classmate support was inversely associated with sexual intercourse, with significant results observed only in girls (OR 0.78, 95% CI 0.69-0.88).

Table 3 reports the Odds of condom use at last sexual intercourse among boys and girls: the use of condom was associated with geographical region; adolescents from Central and Southern Italy were less likely to use condoms when compared to their counterparts from Northern Italy, with significant results for boys from Southern Italy [OR 0.70 and 0.76, respectively, for girls and boys in Central Italy; 0.97 for girls in Southern Italy, not-significant (95% CI 0.72-1.31); 0.64, 95% CI 0.49-0.84 for boys in Southern Italy]. Higher socioeconomic status was also associated with condom use in both girls and boys, with statistically significant results for medium and high socioeconomic status among boys (OR 1.44, 95% CI 1.11-1.86 and OR 1.51, 95% CI 1.12-2.04, respectively) and high socioeconomic status in girls (OR 1.50, 95% CI 1.07-2.10).

Adolescents who lived with both parents were also significantly more likely to have used a condom at last sexual intercourse (OR 1.30, 95% CI 1.02-1.68 in boys; OR 1.43, 95% CI 1.10-1.86 in girls). The same was observed for social support: high support was associated with higher odds of condom use, with significant results for high family support in girls (OR 1.45, 95% CI 1.13-1.82), and for high teacher support (OR 1.29, 95% CI 1.03-1.60), high peer support (OR 1.30, 95% CI 1.03-1.63), and high classmate support (OR 1.29, 95% CI 1.01-1.67) in boys.

Condom use was less frequent among adolescents using other contraceptive methods. Oral contraceptive use was negatively associated with condom use, with significant results, in particular for girls (OR 0.20, 95% CI 0.22-0.44). The same was observed for other contraceptive methods, which showed a negative association with condom use in both boys and in girls (OR 0.27, 95% CI 0.22-0.34 and OR 0.23, 95% CI 0.18-0.31, respectively). Further analyses not reported in the tables showed that oral contraceptive use was significantly less common in girls from Southern Italy (OR 0.50, 95% CI 0.33-0.81) and more frequent in girls who reported high family support (OR 1.43, 95% CI 1.11-1.96). The choice of other contraceptive methods was significantly more frequent in adolescents from Central and Southern Italy (OR 1.13, 95% CI 0.83-1.53 and OR 1.58, 95% CI 1.24-2.02, respectively, for boys; and OR 1.53, 95% CI 1.15-2.04 and OR 1.59, 95% CI 1.24-2.04, respectively, for girls); while a negative association was shown for girls living with both parents (OR 0.73, 95% CI 0.57-0.92).

Table 1
Descriptive analyses of study variables by gender and in the overall sample, the Health Behaviours in School-aged Children study, Italy, 2018

	Girls (n = 9,506)		Boys (n = 9,412)		Total (n = 18,918)	
	N	%	N	%	N	%
Geographical region						
Northern Italy	4,448	46.79	4,331	46.02	8,779	46.41
Central Italy	1,723	18.13	1,751	18.60	3,474	18.36
Southern Italy	3,335	35.08	3,330	35.38	6,665	35.23
Socioeconomic status^a						
Low	2,536	27.25	2,257	24.89	4,793	26.08
Medium	4,620	49.64	4,558	50.26	9,178	49.95
High	2,151	23.11	2,253	24.85	4,404	23.97
Family structure						
Living with both parents	7,613	80.09	7,422	78.86	15,035	79.47
Not living with both parents	1,893	19.91	1,990	21.14	3,883	20.53
Family support^b						
Low	3,330	35.45	2,714	29.48	6,044	32.49
High	6,063	64.55	6,493	70.52	12,556	67.51
Peer support^b						
Low	2,903	30.86	3,714	40.29	6,617	35.53
High	6,503	69.14	5,504	59.71	12,007	64.47
Teacher support^b						
Low	5,147	54.81	4,683	50.58	9,830	52.71
High	4,243	45.19	4,575	49.42	8,818	47.29
Classmate support^b						
Low	3,379	35.78	2,266	24.38	5,645	30.13
High	6,064	64.22	7,027	75.62	13,091	69.87
Early SI^b						
No	7,434	81.72	6,298	74.70	13,732	78.34
Yes	1,663	18.28	2,133	25.30	3,796	21.66
Condom use at last SI^{b,c}						
No	506	31.08	536	25.73	1,042	28.08
Yes	1,122	68.92	1,547	74.27	2,669	71.92
Oral contraceptive use at last SI^c						
No	1,377	87.04	1,768	88.36	3,145	87.78
Yes	205	12.96	233	11.64	438	12.22
Other contraceptive methods at last SI^{b,c}						
No	820	52.30	1,280	63.97	2,100	58.84
Yes	748	47.70	721	36.03	1,469	41.16

^aAs measured by the Family Affluence Scale.
^bchi-squared test significance for a value of p<0.05.
^cpercentages for participants who reported early SI.
 SI: sexual intercourse.

DISCUSSION

Adolescence represents a time of great change, particularly with regard to sexual maturation, during which adolescents who may be more physically and/or emotionally immature may be at risk for sexually transmit-

ted infections and unintended pregnancy [7, 9, 10, 12]. This risk seems more common in those with early sexual intercourse, commonly defined as first sexual intercourse before the age of 16 years [6, 14-16]. Furthermore, early sexual debut has been shown to be more

**Table 2**

Odds of early sexual intercourse in boys and girls in relation to geographical region, socioeconomic status, family structure, and social support. The Health Behaviours in School-aged Children study, Italy, 2018

	Girls		Boys	
	adjOR	95% CI	adjOR	95% CI
Geographical region				
Northern Italy	1		1	
Central Italy	1.21	1.00-1.47	1.55	1.26-1.90
Southern Italy	0.98	0.83-1.16	2.35	2.00-2.78
Socioeconomic status*				
Low	1		1	
Medium	0.88	0.76-1.00	1.10	0.96-1.26
High	1.10	0.93-1.29	1.56	1.33-1.83
Family structure				
Living with both parents	0.65	0.57-0.74	0.79	0.69-0.90
Social support				
High family support	0.55	0.49-0.62	0.84	0.75-0.95
High peer support	0.90	0.79-1.01	1.47	1.31-1.65
High teacher support	0.64	0.57-0.72	0.74	0.66-0.82
High classmate support	0.78	0.69-0.88	0.96	0.84-1.09

Analyses were adjusted for socioeconomic status and geographical region and expressed as adjusted odds ratios (adjORs) and 95% confidence intervals (CIs); in all dichotomous variables reference value considered is "not having"; Missing values in the outcome variable: n=981 (10.4%) in boys and 409 (4.3%) in girls. Statistically significant results are in bold.

*As measured by the Family Affluence Scale.

Table 3

Odds of condom use at last SI among boys and girls with early SIs by geographical region, socioeconomic status, family structure, social support, and use of oral contraceptives or other contraceptive method. Health Behaviours in School-aged Children study, Italy, 2018

	Girls		Boys	
	adjOR	95% CI	adjOR	95% CI
Geographical region				
Northern Italy	1		1	
Central Italy	0.70	0.50-1.00	0.76	0.54-1.07
Southern Italy	0.97	0.72-1.31	0.64	0.49-0.84
Socioeconomic status*				
Low	1		1	
Medium	1.00	0.76-1.31	1.44	1.11-1.86
High	1.50	1.07-2.10	1.51	1.12-2.04
Family structure				
Living with both parents	1.43	1.10-1.86	1.30	1.02-1.68
Social support				
High family support	1.45	1.13-1.82	1.21	0.96-1.54
High peer support	1.04	0.81-1.34	1.30	1.03-1.63
High teacher support	1.28	1.00-1.65	1.29	1.03-1.60
High classmate support	1.10	0.87-1.40	1.29	1.01-1.67
Contraceptive method used at last SI				
Oral contraceptives	0.20	0.22-0.44	0.92	0.64-1.30
Other contraceptive methods	0.23	0.18-0.31	0.27	0.21-0.34

Analyses were adjusted for socioeconomic status and geographical region and expressed as adjusted odds ratios (adjORs) and 95% confidence intervals (CIs); in all dichotomous variables reference value considered is "not having". Statistically significant results are in bold.

Missing values in the outcome variable: n=50 (2.3%) in boys and 35 (2.1%) in girls.

*As measured by the Family Affluence Scale.

SI: sexual intercourse.

frequent in adolescents with poor perceived social support [2]. The present study explored whether social support was associated with early sexual intercourse and lack of condom use, and whether some forms of social support could act as protective factors.

The proportion of Italian students reporting early sexual intercourse in this study was nearly the same as that observed in the 2010 HBSC wave (18% for females and 26% for males) [31] and slightly lower than that observed in that of 2014 (21% for females and 28% for males) [32]. Moreover, results are also similar to those reported in a study on adolescent health and sexuality among 14- and 15-years old students in Italy [33].

Sexual behaviour: Italian HBSC results 2018 vs International HBSC results 2018

Sexual habits data obtained from the Italian HBSC 2018 study were compared to those from International HBSC 2018 results, which for sexual habits involved 43 countries (including Italy).

Among all countries participating in the international study, an average of 14% of girls and 24% of boys reported early sexual intercourse, compared to 18% of girls and 25.3% of boys in our sample. However, the proportions we observed are still far from the highest percentages observed in Greenland (46% for girls) and Albania and Georgia (45% for boys), and far from the lowest reported in Kazakhstan and Armenia (1% for girls) and Kazakhstan and Russian Federation (14% for boys) [34].

Out of all 43 countries participating in the 2018 HBSC Italian boys and girls who reported sexual intercourse ranked at 10th and 11th place, respectively.

As for condom use there was a higher proportion of use at last sexual intercourse in boys than in girls (74.3% vs 68.9%), which is similar to that reported in 2014 Italian HBSC (75.3% and 69.9%) [32]. In a wider context, Italy was above the average of HBSC countries concerning condom use, but far from the highest proportion, which was reported for Spanish girls (78%) and for Hungarian boys (79%), and far from the lowest proportion observed in Wales (44%) for boys and in Albania (30%) for girls. On the overall all out of the 43 countries participating in the 2018 international study, boys and girls ranked 5th and 21st, respectively, for condom use [34].

Sexual behaviour and social support

Confirming the results of previous research, our study highlighted that living with both parents may reduce the likelihood of early sexual intercourse [5, 6, 35], even if this result did not reach statistical significance in other studies [24]. The same studies showed that students with lower socioeconomic status were at higher risk of early sexual intercourse [6, 24], which is different to what observed in Italy.

Previous studies have reported that adolescents' view of sexual readiness is influenced by gendered behaviours shaped by peer and social context, and family and significant adults have been revealed to have an important role [10, 36]. Accordingly, our results showed that

high family support reduced the likelihood of early sexual intercourse in both genders, and also led to higher use of condoms or oral contraceptives, particularly in girls. This result has been confirmed by other studies that highlighted how adolescents who perceived that they had a supportive family and who had a strong relationship with their parents were more likely to delay sexual activity [10]. Parents can play an important role in socialisation and sexuality education through effective communication about sex. This helps adolescents have a greater sense of stability and security, which is needed to favour adequate sexual health practices and to facilitate their growth into sexually healthy adults [17, 37]. De Looze *et al.* also found that parent support and dialogue about protection and contraception reduced the likelihood of early adolescent sexual initiation [37]. Notably in our research, high family support was associated with the use of condoms or oral contraceptives in girls.

Templeton *et al.* suggested that the messages received from parents and other adults are perceived as very important by adolescents, who are torn between what adults communicate and the behaviours that are expected by peers [36]. Coherently, high teacher support in our results reduced the chances of early sexual intercourse in both genders. Moreover, the relationship between school and sexual debut, which has been investigated mainly in terms of aspiration and academic performance, showed that adolescents with high school aspirations and those who appreciate education were less likely to engage in early sexual behaviours [5]. In addition, sexuality education in school has been reported to be an important protective factor against risky sexual behaviour [38]. Interestingly, modes of delivery of sexuality education other than teachers have been associated with better sexual health outcomes (remaining sexually inactive, later age at first sexual intercourse, and condom use) [39]. Therefore, adolescents' beliefs and choices seem to be conditioned by adults; however, these relationships are worthy of further analysis, especially the one with teachers, which has been less explored.

In contrast to family and teacher support, in our study peer support favoured an early sexual initiation among boys. An analysis of the literature showed that this effect of peer support has also been demonstrated in other studies [24], and that this might be related to the social pressure that peers exert on adolescents [5, 36]. It has been found that early sexual intercourse is not an unplanned experience for many teens, and decisions about first sexual intercourse are greatly related to social environment, with peers playing an essential part in building a sense of normative behaviour [40]. Indeed, adolescents tend to modify their conduct when they feel that their peers are starting a new behaviour, suggesting that public health action plans must face this issue by targeting peer communities instead of focusing on individuals [40]. Interestingly, and by contrast, Burke *et al.* reported that having a wider network of peers might protect against early sexual intercourse, as it would allow a more accurate assessment of both the associated risks and the normative behaviour [10]. Moreover, our study showed a significant positive relationship between



peer and classmate support in favouring condom use. Indeed, it has been shown that communication regarding contraception is an important predictive factor for contraceptive use among adolescents [24].

STRENGTHS AND LIMITATIONS

The HBSC study has some overall strengths and limitations that were discussed in the common section (see *Appendix 1* in the paper by Nardone *et al.* published in this issue of *Annali dell'Istituto Superiore di Sanità*). This particular analysis was limited in exploring sexual intercourse and condom use. Given the need to better address adolescents' sexual health, it would be helpful to enlarge the questionnaire. Moreover, the dichotomisation of some of the variables could have caused a loss of information.

CONCLUSIONS

Promoting healthy sexual maturation among adolescents requires educators to adopt a holistic approach. Adolescents who have access to comprehensive sexuality and relationship education, confidential reproductive health services, and appropriate contraceptive methods have better sexual health [4]. The support of the family, peers, teachers and schoolmates is important in these ages, even if pushing in different directions. When planning and implementing actions, it is advisable that they are not limited to the individual level, but that involve families and teachers as significant adults [10, 36]. Communication about sex between parents and adolescents has been positively associated with adolescents' use of contraceptives, and of condoms in particular [41]. Moreover, it is advisable to deliver interventions that include peers and classmates, as these groups have been shown to have a beneficial impact on the process of building a sense of positive normative behaviour [40]. Given that in many European countries, including Italy, there is no evidence of a comprehensive policy on sexual health education in schools and communities [42], it is highly advisable to invest in age-appropriate, comprehensive sexuality education curricula. Educational guidance and standardised content on this subject should be created and made available for students from preschool to university, and programmes should aim to engage peers and the adults who influence adolescents' lives both in and out of school [4].

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Conflict of interest statement

All authors declare that they have no conflict of interest.

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Ethical approval

The Italian HBSC study protocol and questionnaire were formally approved by the Ethics Committee of the Italian National Institute of Health (PROT-PRE876/17, 20 November 2017).

Author's contribution statement

AB, GLM and PL edited the draft and completed the manuscript; PD supervised the process of analyses; GLM and LC conducted the statistical analyses and contributed to the writing; PN, SD, PB, ML, AS contributed to the final manuscript editing. All authors participated in designing the study and data collection as members of the HBSC Italian team. All authors have critically revised the manuscript and approved its final version.

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REFERENCES

1. Holder MK, Blaustein JD. Puberty and adolescence as a time of vulnerability to stressors that alter neurobehavioral processes. *Front Neuroendocrinol.* 2014;35(1):89-110. doi: 10.1016/j.yfrne.2013.10.004
2. Department of Human Services, Department of Planning and Community Development, Department of Education and Early Childhood Development. Vulnerable youth framework discussion paper. Development of a policy framework for Victoria's vulnerable young people. Melbourne: Victoria Government Department of Human Services; 2008.
3. Peter Adamson. Child well-being in rich countries: A comparative overview. Innocenti Report Card 11. UNICEF; 2013.
4. World Health Organization. Sexual health and its linkages to reproductive health. An operational approach. Human Repr. Geneva: WHO; 2017.
5. Lee RLT, Yuen Loke A, Hung TTM, Sobel H. A systematic review on identifying risk factors associated with early sexual debut and coerced sex among adolescents and young people in communities. *J Clin Nurs.* 2018;27:478-501. doi: 10.1111/jocn.13933
6. Hawes ZC, Wellings K, Stephenson J. First heterosexual intercourse in the United Kingdom: A review of the literature. *J Sex Res.* 2010;47:137-52. doi: 10.1080/00224490903509399
7. Steyn PS, Goldstuck ND. Contraceptive needs of the adolescent. *Best Pract Res Clin Obstet Gynaecol.* 2014;28:891-901. doi: 10.1016/j.bpobgyn.2014.04.012
8. McCracken KA, Loveless M. Teen pregnancy: An update. *Curr Opin Obstet Gynecol.* 2014;26:355-9. doi: 10.1097/GCO.000000000000102
9. Heywood W, Patrick K, Smith AMA, Pitts MK. Associations between early first sexual intercourse and later sexual and reproductive outcomes: a systematic review of population-based data. *Arch Sex Behav.* 2015;44:531-69. doi: 10.1007/s10508-014-0374-3
10. Burke L, Gabhainn SN, Kelly C. Socio-demographic, health and lifestyle factors influencing age of sexual initiation among adolescents. *Int J Environ Res Public Health.* 2018;15(9):1851. doi: 10.3390/ijerph15091851
11. Bingham CR, Crockett LJ. Longitudinal adjustment patterns of boys and girls experiencing early, middle, and late sexual intercourse. *Dev Psychol.* 1996;32:647-58. doi: 10.1037/0012-1649.32.4.647
12. Nic Gabhainn S, Baban A, Boyce W, Godeau E, HBSC Sexual Health Focus Group. How well protected are sexually active 15-year olds? Cross-national patterns in condom and contraceptive pill use 2002-2006. *Int J Public Health.* 2009;54(Suppl 2):209. doi: 10.1007/s00038-009-5412-x.
13. O'Donnell L, O'Donnell CR, Stueve A. Early sexual initiation and subsequent sex-related risks among urban minority youth. The reach for health study. *Fam Plann Perspect.* 2001;268-75.
14. Godeau E, Vignes. C, Duclos M, Navarro F, Cayla F, Grandjean H. Factors associated with early sexual initiation in girls: French data from the international survey health behaviour in school-aged children (HBSC)/WHO. *Gynecol Obstet Fertil.* 2008;36:176-82.
15. Magnusson BM, Masho SW, Lapane KL. Early age at first intercourse and subsequent gaps in contraceptive use. *J Womens Health. (Larchmt)* 2012;21:73-9. doi: 10.1089/jwh.2011.2893
16. Lavikainen HM, Lintonen T, Kosunen E. Sexual behavior and drinking style among teenagers: a population-based study in Finland. *Health Promot Int.* 2009;24:108-19.
17. Foster CE, Horwitz A, Thomas A, Opperman K, Gipson P, Burnside A, et al. Connectedness to family, school, peers, and community in socially vulnerable adolescents. *Child Youth Serv Rev.* 2017;81:321-31.
18. Moore GF, Cox R, Evans RE, Hallingberg B, Hawkins J, Littlecott HJ, et al. School, peer and family relationships and adolescent substance use, subjective wellbeing and mental health symptoms in Wales: a cross sectional study. *Child Indic Res.* 2018;11:1951-65. doi: 10.1007/s12187-017-9524-1
19. Lemma P, Borraccino A, Berchiolla P, Dalmaso P, Charrier L, Vieno A, et al. Well-being in 15-year-old adolescents. A matter of relationship with school. *J Public Health (Oxf).* 2015;37:573-80. doi:10.1093/pubmed/dfu095
20. Marino C, Vieno A, Lenzi M, Santinello M. Time trends in adolescent sexual behaviour in Italy. *Sex Health.* 2014;11:379-80. doi: 10.1071/SH14094
21. Toth F. How health care regionalisation in Italy is widening the North-South gap. *Heal Econ Policy Law.* 2014;9:231-49. doi: 10.1017/S1744133114000012
22. Istituto Nazionale di Statistica – ISTAT. *Annuario Statistico Italiano 2019.* Roma: ISTAT; 2019.
23. Levin KA, Dallago L, Currie C. The association between adolescent life satisfaction, family structure, family affluence and gender differences in parent-child communication. *Soc Indic Res.* 2012;106:287-305. doi: 10.1007/s11205-011-9804-y
24. Young H, Burke L, Gabhainn SN. Sexual intercourse, age of initiation and school-aged children (HBSC) Ireland study. *BMC Public Health.* 2018;18:362. doi: 10.1186/s12889-018-5217-z
25. Zimet GD, Dahlem NW, Zimet SG, Farley GK. The multidimensional scale of perceived social support. *J Pers Assess.* 1988;52:30-41.
26. Inchley J, Currie D (Dorothy B, Young T, Samdal O, Torsheim T, Augustson L, et al. Growing up unequal : gender and socioeconomic differences in young people's health and well-being: health behaviour in school-aged children (HBSC) study: international report from the 2013/2014 survey. Denmark: WHO Regional Office for Europe, 2016.
27. Dalmaso P, Borraccino A, Lazzeri G, Charrier L, Berchiolla P, Cavallo F, et al. Being a young migrant in Italy. The effect of perceived social support in adolescence. *J Immigr Minor Health.* 2018;20:1044. doi: 10.1007/s10903-017-0671-8
28. Canty-Mitchell J, Zimet GD. Psychometric properties of the Multidimensional Scale of Perceived Social Support in urban adolescents. *Am J Community Psychol.* 2000;28:391-400.
29. Torsheim T, Wold B, Samdal O. The teacher and classmate support scale factor structure, test-retest reliability



- and validity in samples of 13-and 15-year-old adolescents. *Sch Psychol Int.* 2000;21:195-212.
30. Young H, Költo A, Reis M, Saewyc EM, Moreau N, Burke L, et al. Sexual health questions included in the health behaviour in school-aged children (HBSC) study: An international methodological pilot investigation. *BMC Med Res Methodol.* 2016;16. doi: 10.1186/s12874-016-0270-8
 31. Cavallo F, Giacchi M, Vieno A, Galeone D, Tomba A, Lamberti A, et al. Studio HBSC-Italia (health behaviour in school-aged children): rapporto sui dati 2010. 2013.
 32. Cavallo F, Lemma P, Dalmasso P, Vieno A, Lazzeri G, Galeone D (Eds). Report Nazionale dati HBSC Italia 2014: 4° Rapporto sui dati HBSC Italia 2014. Torino: Stampatre s.r.l.; 2016.
 33. Donati S, Andreozzi S, Medda E, Grandolfo ME. Salute riproduttiva tra gli adolescenti: conoscenze, attitudini e comportamenti. Rapp ISTISAN 00/7.
 34. Inchley J, Currie D, Budisavljevic S, Torsheim T, Jåstad A, Cosma A, et al. (Eds). Spotlight on adolescent health and well-being. Findings from the 2017/2018 Health Behaviour in School-aged Children (HBSC) survey in Europe and Canada. International Report Volume 2. Key Data. Copenhagen, Denmark: WHO Regional Office for Europe; 2020.
 35. Madkour AS, De Looze M, Ma P, Halpern CT, Farhat T, Ter Bogt TFM, et al. Macro-level age norms for the timing of sexual initiation and adolescents' early sexual initiation in 17 European countries. *J Adolesc Health.* 2014;55:114-121. doi: 10.1016/j.jadohealth.2013.12.008
 36. Templeton M, Lohan M, Kelly C, Lundy L. A systematic review and qualitative synthesis of adolescents' views of sexual readiness. *J Adv Nurs.* 2017;73:1288-301. doi: 10.1111/jan.13207
 37. De Looze M, Constantine NA, Jerman P, Vermeulen-Smit E, Ter Bogt T. Parent-adolescent sexual communication and its association with adolescent sexual behaviors: A nationally representative analysis in the Netherlands. *J Sex Res.* 2015;52:257-68. doi: 10.1080/00224499.2013.858307
 38. Ramiro L, Reis M, De Matos MG, Diniz JA. Sex education among Portuguese adolescent students. *Proc Soc Behav Sci.* 2011;29:493-502. doi: 10.1016/j.sbspro.2011.11.268
 39. Young H, Long SJ, Hallingberg B, Fletcher A, Hewitt G, Murphy S, et al. School practices important for students' sexual health: Analysis of the school health research network survey in Wales. *Eur J Public Health.* 2017;28:309-14. doi: 10.1093/eurpub/ckx203
 40. Kinsman SB, Romer D, Furstenberg FF, Schwarz DF. Early sexual initiation: The role of peer norms. *Pediatrics.* 1998;102:1185-92. doi: 10.1542/peds.102.5.1185
 41. Widman L, Choukas-Bradley S, Noar SM, Nesi J, Garrett K. Parent-adolescent sexual communication and adolescent safer sex behavior: A meta-analysis. *JAMA Pediatr.* 2016;170:52-61.
 42. Beaumont Karolina, Maguire Marcia. Directorate General for Internal Policies. Policy department c: citizens' rights and constitutional affairs. Gender equality. Policies for sexuality education in the European Union. Note. Brussels; 2013. doi: 10.2861/11317