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How well protected are sexually active 15-year olds? Cross-national patterns in condom and contraceptive pill use 2002–2006

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Abstract

Objectives: To present comparative data on sexual initiation, and condom use and contraceptive pill use at last intercourse among adolescents in Europe, Israel and Canada.

Methods: Data were collected by self-report questionnaire from nationally representative samples of 15 year olds in school classrooms in two cross-national surveys undertaken in 24 countries in 2001/02 and 30 countries in 2005/06.

Results: In 2005/06 almost 27 % of those surveyed had had sex and almost 86 % reported using condoms or the contraceptive pill at last intercourse. This reflects little change since 2001/02 in prevalence of sexual initiation and a general increase in being well-protected at last intercourse. There were wide variations with up to a third of sexually active 15 year olds in some countries at risk for either Sexually Transmitted Infections or pregnancy, or both.

Conclusions: Most adolescents were well protected against Sexually Transmitted Infections and pregnancy, but an important minority remain at risk, with very wide cross-national differences.

Keywords: Adolescence – Sexual behaviour – Contraception use – Cross-national comparisons – HBSC.

Introduction

Reproductive and Sexual Health (RSH) is an integral part of Holistic Health, and comprises the promotion of safe and healthy sexual behaviour, including reproductive choice. RSH has a substantial contribution to make towards meeting the Millennium Development Goals. Indeed, it has been argued that RSH is fundamental to human well being¹.

The challenges for maximising the sexual health of adolescents are substantial. Across industrialised nations, a relatively high proportion of those leaving compulsory education, at around age 16, have already experienced sexual intercourse, and have engaged in sexual risk behaviour^{2,3}. Addressing the sexual health of young people by raising their commitment to safer sex has become a major issue among developed countries^{1,2,4}. Evidence suggests the rates of adolescent pregnancy are decreasing^{2,10,11}. However, the average age of coitarche is also decreasing, and in many countries and regions there has been a reported rise in sexually transmitted infections (STIs)^{2,12}. Thus, while the risk profile may be changing, early and poorly protected sexual intercourse remains of central relevance to public health^{11,13,14}.

The potential risks associated with sexual behaviour among 15 year olds are mainly linked to the emotional and behavioural characteristics of this developmental stage. It is known that early sex has implications for self-perceptions, social status and future health behaviour⁵. Unprotected and poorly protected intercourse brings the risk of unintended pregnancy with its myriad of possible outcomes for this age group, including abortion, early motherhood and adoption – each of

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which presents educational, economic, social and health challenges^{6–9}. Moreover, for those not employing barrier methods of protection, there is also the risk of sexually transmitted infections (STIs) with serious short- and long-term attendant medical, health and social implications⁴.

Appropriate contraceptive use for adolescents varies somewhat from that recommended for adults. In some cases this is because the mode of contraception would endanger the reproductive future of the adolescents (e. g., sterilisation, and to some extent intrauterine devices), and in other cases because of the general inappropriateness of the method to their developmental stage (e. g., rhythm method). Condoms and contraceptive pills are considered the most appropriate methods of protection for most sexually active adolescents, and the use of dual methods – both contraceptive pill and condom at the same time – confers effective protection against pregnancy and moderately effective protection against STIs¹⁰.

The adequacy and effectiveness of contraception methods depends on many interacting factors related to the contraceptive itself (e. g., efficacy, availability, cost, convenience); the sexual activity (e. g., type of sexual behaviors, frequency of intercourse, risk of STIs); the person and/or partner (e. g., age, ethnicity, culture, religious beliefs, educational level, family characteristics); the broader context (e. g., historical, cultural, religious and social)^{15–17}; and inter-personal relationship dynamics (e. g., duration of relationship, age difference between partners, trust). A similar range of predictors has been associated with the non-use of appropriate contraception during adolescence. Aside from not having access to contraception and actively wanting to achieve pregnancy, non-use of contraception has been associated with knowledge of and attitudes to contraceptive methods, such as perceiving condom users as ‘unclean’ and perceived difficulty of contraceptive use^{17,18} and characteristics of relationships with sexual partners. Poor communication with sexual partner in relation to contraception and not wanting to appear too knowledgeable or ‘forward’ have been linked with inconsistent or non-use of appropriate contraception^{17,19}.

Previous analyses of the 2001/02 HBSC survey³ have found that a substantial minority of 15 year olds had engaged in sexual intercourse, and that condoms were the most frequent method of contraception at last intercourse reported by the sexually active respondents, followed by the dual use of condoms and contraceptive pills, and contraceptive pill only. Gaps in the knowledge base on adolescent sexual behaviour in relation to trends in contraception use²⁰ and comparable cross-national data² have previously been highlighted. The Health Behaviour in School-aged Children (HBSC) study enables a unique opportunity to document these patterns across a wide variety of countries in a systematic fashion. This paper

presents the most recent data on ever having had sex, and condom and contraceptive pill use at last intercourse, reported by sexually active 15 year olds in 30 countries across Europe, Israel and Canada in 2005/06, alongside data from the 2001/02 survey (24 countries). All HBSC participating countries that asked standardised questions on contraceptive use at last intercourse are included in these analyses.

Methods

The data presented here are drawn from the 2001/02 and the 2005/06 World Health Organisation collaborative HBSC study. HBSC is an international collaboration between research teams across Europe and North America, which aims to gain insight into and further understanding of adolescent health. Data were collected through a school-based survey using classroom administered self-completion questionnaires in each participating country and region, with requirements in terms of sampling, questionnaire items and survey administration being set out in a standardised research protocol. Participation in the survey was voluntary, with assurances provided in relation to confidentiality and anonymity. Each country respected ethical and legal requirements for this type of survey.

The population selected for sampling was young people attending school aged 11, 13 and 15, with the desired mean age for the three age groups being 11.5, 13.5 and 15.5. Participating countries were required to include a minimum of 95 percent of the eligible target population within their sample frame. In the majority of countries, national representative samples were drawn and samples were stratified to ensure representation by, for example, geography, ethnic group and school type. Cluster sampling was used, the primary sampling unit being school class (or school where a sampling frame of classes was not available). The recommended sample size for each of the three age groups was approximately 1 500 students, assuming a 95 % confidence interval of ± 3 percent around a proportion of 50 per cent and allowing for the clustered nature of the samples. Further details of the study's development and methods employed can be found in this supplement and elsewhere^{21–23}.

Sample

These analyses are based on data collected from 15 year old students in 30 countries (see Tab. 1). The questions on sexual behaviour are not asked of younger pupils because of the expected low rate of sexual activity, and sensitivity to the perspectives of parents, teachers and students on the appropriateness of such questions in early adolescence.

Table 1. Sample size and prevalence of reporting ever having had sexual intercourse among 15 year-olds by gender, country and year of data collection.

	2001/2				2005/6			
	Total n	All sexually initiated n (%)	Boys sexually initiated n (%)	Girls sexually initiated n (%)	Total n	All sexually initiated n (%)	Boys sexually initiated n (%)	Girls sexually initiated n (%)
Austria	1227	243 (19.8)	133 (21.7)	110 (17.9)	1431	404 (28.2)	202 (30.9)	202 (26.0)
Belgium (Flemish)	1946	463 (23.8)	238 (24.6)	225 (23.0)	1568	360 (23.0)	175 (22.0)	185 (23.9)
Bulgaria	–	–	–	–	1630	624 (38.3)	351 (46.7)	273 (31.1)
Canada	1102	264 (24.0)	114 (24.1)	150 (23.9)	2137	502 (23.5)	231 (23.1)	271 (23.8)
Croatia	1388	196 (14.1)	131 (21.9)	65 (8.2)	1598	354 (22.1)	213 (28.6)	141 (16.5)
Denmark	–	–	–	–	1469	562 (38.2)	259 (36.6)	303 (39.8)
England	1675	699 (41.7)	290 (34.9)	409 (39.9)	1402	404 (28.8)	184 (26.4)	220 (31.2)
Estonia	1237	203 (16.4)	114 (18.8)	89 (14.1)	1541	382 (24.8)	204 (26.2)	178 (23.3)
Finland	1700	475 (27.9)	193 (23.1)	282 (32.7)	1570	434 (27.6)	183 (25.2)	251 (29.8)
France	2505	536 (21.4)	312 (25.1)	224 (17.7)	2139	599 (28.0)	359 (32.9)	240 (22.9)
Germany	–	–	–	–	2369	554 (23.4)	266 (22.8)	288 (23.9)
Greece	1255	258 (20.6)	196 (32.5)	62 (9.5)	1311	395 (30.1)	264 (45.7)	131 (17.8)
Greenland	–	–	–	–	336	205 (61.0)	88 (55.3)	117 (66.1)
Hungary	1302	255 (19.6)	123 (25.0)	132 (16.3)	1081	248 (22.9)	121 (25.1)	127 (21.2)
Israel	1135	216 (19.0)	167 (31.0)	49 (8.2)	1097	155 (14.1)	106 (23.2)	49 (7.7)
Latvia	1053	161 (15.2)	86 (19.2)	75 (12.4)	1223	245 (20.0)	121 (21.5)	124 (18.8)
Lithuania	1842	312 (16.9)	229 (24.4)	83 (9.2)	1828	336 (18.4)	225 (24.6)	111 (12.2)
Macedonia	1342	233 (17.4)	214 (34.2)	19 (2.7)	1857	358 (19.3)	312 (33.8)	46 (4.9)
Netherlands	1235	270 (21.9)	143 (23.3)	127 (20.5)	1347	345 (25.6)	163 (24.7)	182 (26.5)
Portugal	783	187 (23.9)	108 (29.2)	79 (19.1)	1315	306 (23.3)	149 (26.5)	157 (20.9)
Romania	–	–	–	–	1523	376 (24.7)	256 (45.8)	120 (12.4)
Russian Federation	–	–	–	–	2417	793 (32.8)	473 (43.8)	320 (23.9)
Scotland	1115	369 (33.1)	179 (32.1)	190 (34.1)	2067	655 (31.7)	308 (29.7)	347 (33.7)
Slovakia	–	–	–	–	1231	145 (11.8)	76 (13.1)	69 (10.6)
Slovenia	1010	244 (24.2)	143 (28.2)	101 (20.1)	1502	348 (23.2)	218 (29.5)	130 (17.0)
Spain	1672	258 (15.4)	134 (17.2)	124 (13.9)	2550	553 (21.7)	278 (22.9)	275 (20.6)
Sweden	1179	317 (26.9)	145 (24.6)	172 (29.2)	1489	427 (28.7)	184 (25.1)	243 (32.1)
Switzerland	1434	319 (22.2)	177 (24.1)	142 (20.3)	1399	284 (20.3)	156 (23.2)	128 (17.6)
Ukraine	1600	513 (32.0)	341 (47.1)	172 (24.0)	1758	508 (28.9)	343 (40.1)	165 (18.3)
Wales	1096	359 (32.8)	153 (27.3)	206 (38.5)	1330	474 (35.6)	202 (30.3)	272 (41.0)

No comparable data are available for 2001/2 from Bulgaria, Denmark, Germany, Greenland, Romania, Russian Federation or Slovakia

Measures

Students were invited to respond to a series of questions in relation to their sexual behaviour and specifically their most recent experience of sexual intercourse. The questions were adopted from the Youth Risk Behaviour Survey^{24,25}. Students were asked to indicate which of a series of contraceptive options they, or their sexual partner, had used at last intercourse; the list comprised condoms, oral contraceptive pills and withdrawal, with many countries adding national options to the list. All questionnaire items were developed first in English, and subsequently translated, and back-translated to and from local languages. Each back-translation was carefully checked for consistency at the international co-ordinating centre at the University of Edinburgh.

Data Management

Not all countries included all contraceptive options, and data from some countries were omitted because they employed a ‘skip’ pattern or phrased their questions in a slightly different way. Thus these analyses only include countries for whom we are confident comparability has been achieved. All contraceptive use data presented are based only on those reporting coitarche, and thus for whom the contraceptive questions are directly relevant. All sexually active students were classified into two groups depending on whether they reported using a condom or the contraceptive pill at last intercourse, or not. Those who reported that they had used either of these two methods, or both of them, were labelled ‘well protected’, as no other contraceptive methods explicitly asked about by all

Table 2. Prevalence of well protected students; reporting condoms only, contraceptive pill only and dual use at last intercourse, by gender, country and year of data collection.

	2001/2						2005/6					
	Boys			Girls			Boys			Girls		
	Pill only	Condom only	Dual use	All protected	Pill only	Condom only	Dual use	All protected	Pill only	Condom only	Dual use	All protected
Netherlands	9.1	46.9	34.3	90.2	26.0	43.3	27.6	96.9	6.7	50.3	35.0	92.0
Switzerland	8.5	56.5	20.9	85.9	12.0	59.2	23.9	95.1	3.2	62.2	26.3	91.7
Denmark	-	-	-	-	-	-	-	-	20.8	47.4	21.2	91.9
Germany	-	-	-	-	-	-	-	-	6.0	49.8	35.3	88.7
Spain	0.0	84.3	3.0	87.3	1.6	78.2	7.3	87.1	0.7	79.9	3.2	83.8
France	4.5	62.2	23.4	90.1	12.1	54.0	22.3	88.4	2.2	73.3	14.5	90.0
Belgium (Flemish)	8.4	42.0	37.8	88.2	27.6	36.4	22.2	86.2	1.7	44.0	34.9	88.0
Portugal	5.6	57.4	11.1	74.1	5.1	67.1	10.1	82.3	1.3	76.5	9.4	87.2
England	10.7	54.2	14.4	79.3	15.6	46.2	23.7	85.6	2.7	68.5	15.8	87.0
Austria	3.8	69.9	13.5	87.2	13.6	61.8	16.4	91.8	3.5	71.3	14.4	89.1
Estonia	2.6	66.7	7.0	76.3	4.5	57.3	10.1	71.9	0.5	74.0	13.7	88.2
Finland	14.5	63.2	7.8	85.5	24.1	50.7	8.2	83.0	8.2	64.5	15.3	88.0
Wales	7.2	54.9	19.6	81.7	15.0	40.3	23.8	79.1	5.9	58.4	23.8	88.1
Ukraine	0.6	64.8	17.9	83.3	1.2	46.5	11.6	59.3	0.3	79.3	9.0	88.6
Scotland	3.9	62.0	12.3	78.2	6.8	47.4	15.3	69.5	2.3	69.5	12.7	84.4
Greece	0.0	86.7	4.6	91.3	0.0	82.3	0.0	82.3	1.5	84.4	3.4	89.7
Latvia	2.3	70.9	4.7	77.9	4.0	65.3	6.7	76.0	0.8	80.2	5.8	86.8
Croatia	0.0	70.2	2.3	72.5	1.5	66.2	3.1	70.8	0.0	74.2	7.5	81.7
Canada	5.3	46.5	28.1	79.8	13.3	41.3	29.3	84.0	3.5	60.2	19.9	83.5
Bulgaria	-	-	-	-	-	-	-	-	0.6	77.8	8.0	86.3
Sweden	15.2	50.3	9.7	75.2	26.2	38.4	8.1	72.7	14.1	57.6	9.8	81.5
Lithuania	3.1	69.0	10.9	83.0	7.2	53.0	12.0	72.3	0.9	78.7	4.4	84.0
Slovenia	4.9	68.5	8.4	81.8	9.9	56.4	10.9	77.2	5.0	56.0	14.2	75.2
Hungary	3.3	67.5	15.4	86.2	3.0	63.6	6.1	72.7	2.5	70.2	8.3	81.0
Macedonia	3.3	77.1	7.0	87.4	0.0	68.4	10.5	78.9	1.0	77.6	3.2	81.7
Israel	2.4	77.2	10.8	90.4	4.1	63.3	10.2	77.6	0.9	67.0	14.2	82.1
Greenland	7.6	65.2	12.1	84.8	15.2	45.5	26.3	86.9	3.4	71.6	3.4	78.4
Russian Federation	-	-	-	-	-	-	-	-	1.1	70.2	6.6	77.8
Romania	-	-	-	-	-	-	-	-	1.2	79.3	1.6	82.0
Slovakia	-	-	-	-	-	-	-	-	1.3	56.6	7.9	65.8

countries in the survey were regarded as providing efficacious, developmentally appropriate protection. The percentage of respondents reporting specific contraception use as well as reporting sexual intercourse was calculated. Because of the gender-specific nature of contraception use, the prevalences below are stratified by gender. Data analyses were undertaken with SUDAAN release 9.0.1 statistical software and SPSS version 16.0 for Mac.

Results

Overall, 26.7 % of surveyed 15 year olds (29.4 % of boys and 24.1 % of girls) reported that they had ever experienced sexual intercourse. Table 1 presents the sample sizes and the percentages who reported having had sexual intercourse by gender, country and year of data collection.

Overall, 1.6 % (1.9 % of boys and 1.2 % of girls) of eligible (i.e., 15 year olds) did not answer the question on whether they had ever had sexual intercourse. Non-response was most frequent in Israel (8.3 %), but in many countries all students responded.

There was large variation across countries in the percentages of 15 year olds reporting ever having sexual intercourse in 2005/6, from 11.8 % in Slovakia to 61.0 % in Greenland. In four countries (Wales, Bulgaria, Denmark and Greenland) the percentages reporting ever having sex exceeded one third. In most countries boys were more likely than girls to report having had sex, and differences of more than 10 % were observed in Bulgaria, Greece, Israel, Lithuania, Macedonia, Romania, Russia and Ukraine. Among the 13 countries where the gender pattern was reversed, the difference was significant ($p < 0.05$) only in Finland, Sweden, Iceland and Wales. Overall the prevalence of sexual initiation varied little between 2001/02 and 2005/06; but there was cross-national variation. Table 1 shows that for both boys and girls there were substantial increases in those reporting sexual initiation in Estonia and decreases in England.

Overall 85.9 % of the 15 year olds surveyed reported that they or their partner had used a condom and/or the contraceptive pill at last intercourse, and thus could be considered well-protected against pregnancy, but not necessarily STIs (see Tab. 2).

The prevalences of condom use at last intercourse were substantially higher than those reporting contraceptive pill use, and in all countries exceeded 65 % of sexually active 15 year olds. Condom use was more frequently reported by boys than girls, except in Croatia, Slovakia, Slovenia and Spain, the two latter significantly so ($p < 0.05$). Condom use without concurrent contraceptive pill use was relatively common

and exceeded 50 % in all countries except Flemish-speaking Belgium, Netherlands, Germany and Denmark. The highest rate of condom use without contraceptive pill use at last intercourse was reported in Spain (85.5 %).

Contraceptive pill use ranged from 4.4 % in Spain to 51.9 % in the Netherlands, and in almost all countries was more likely to be reported by girls than boys (about their partner). The only exceptions to this gender pattern are found in Bulgaria, Slovakia and the Ukraine, only the latter difference achieving statistical significance ($p < 0.05$). Rates of contraceptive pill use at last intercourse were relatively low in many Baltic, eastern and central European countries. Few 15 year olds reported sole use of the contraceptive pill without concurrent condom use; rates ranged from less than 1 % in Greece, Croatia, Ukraine, Bulgaria, Macedonia and Lithuania to a maximum of 23.5 % in Denmark.

The prevalence of dual use of both condom and contraceptive pill ranged widely; from less than 5 % in Spain, Romania, Macedonia and Slovakia, to more than one third in Flemish speaking Belgium, Germany and the Netherlands. In almost half of countries dual contraceptive use was reported by fewer than 10 % of 15 year olds. Few gender differences were observed in reported rates of dual contraceptive pill and condom use; boys reported at least 5 % more dual use in Switzerland, Israel and the Ukraine, while girls reported at least 5 % more dual use in Greenland, Lithuania, Netherlands, Portugal and Romania. In all other countries gender differences were narrower.

Overall, the proportion of well protected students in 2005/06 represents an increase on 2001/2. Among those countries for whom there are data at both time points, there is an increase in a majority of countries (16/24 for boys and 19/24 girls) and that increase exceeds 5 % in 7 countries: Croatia, Estonia, Latvia, Portugal, Scotland, Sweden and the Ukraine. Notable decreases in reported condom and contraceptive pill use were found for boys in Israel and for girls in Israel and Greece – related to reductions in reported use of condom only – and Greenland – related to reduced dual contraceptive use.

Discussion

More than a quarter of surveyed 15 year olds in 2005/06 reported having had sexual intercourse and of these, almost 86 % reported that they were well protected at last intercourse by the use of condoms or contraceptive pills or both. In most countries this represents no or minimal change in the proportions reporting that they had had sex and a general increase in being well-protected at last intercourse since 2001/02.

The increases in appropriate contraceptive use mirror improvements in adolescent contraception use reported from other surveys for the US^{11,13} and the UK¹⁴, and are in line with the reported global increase in condom use²⁶. However an important minority – the poorly protected – find themselves at risk of pregnancy and STI transmission even if they think they are protected by use of other, less efficacious, methods (e.g., withdrawal, spermicides), and there are still very wide cross-national differences. Although condoms are by far the most frequent method of contraception reported by the 15 year olds in these samples, up to 35% of students did not report condom use at last intercourse and thus may be at risk for STIs. Similarly although most report being well protected against pregnancy, such risk remains for up to a third of students.

These findings are important because they provide data on such a young age group, and do so across countries and by gender. Country results constitute evidence that should be taken in consideration by national policy makers to shape and adapt Reproductive and Sexual Health policy to the needs of adolescents^{26,27}. Gender differences in ever having had sex may be interpreted as reflecting the persistence of traditional gender norms in many of eastern and south-eastern European countries that allow or even encourage more freedom and sexual experiences for boys than for girls. On the other hand, the low rates of contraceptive pill use in many Baltic, eastern and central European countries might reflect a lack of sexual education provided to this age group, or greater barriers (e.g., price, availability) in accessing contraceptive pills in these countries than in western and northern European countries, or indeed both.

Access to contraception is not the only necessary condition for well-protected sexual intercourse in adolescence. Adolescents require education in relation to the use of contraception, and their limitations; when they should be used (e.g., before penetration in the case of condoms) and how to use them²⁸. These data highlight countries where culturally appropriate evidence of the precursors of condom and contraceptive pill use is required to inform policy and practice. Access to suitable contraception and education as to appropriate use is required, but must occur alongside public health measures to improve understanding of how to use contraception, and how to negotiate contraception use with sexual partners.

These data are based on retrospective self-reports from students in classrooms and are subject to inherent methodologi-

cal biases²⁹ that likely vary by gender and country. They are restricted to a single age group and thus cannot inform us about the full range of adolescent sexual health behaviour. Willingness to respond accurately are liable to vary by country; reflecting perceived national-level norms and expectations. It is thus important not to over-interpret these findings. Although it is preferable to ask about last sexual intercourse, it does mean that we do not have data on current levels of sexual activity, and thus about current levels of risk. Young people of this age are in the process of establishing their sexual selves; not all have yet initiated intercourse. Thus the sample sizes upon which the rates of contraception use are calculated are low in some countries; and thus are less reliable than would be ideal; for example, they are too low in most countries to permit sufficiently powerful investigation of socio-economic predictors of reported contraception use²¹. In addition other factors, not assessed here, may prove to be important. Further studies are warranted to explicitly confirm the examined cross-national differences by means of multi-level analyses. Such statistical models should also permit the incorporation of potential determinants.

These data raise further questions in relation to sexual health behaviour in adolescence – not least related to countries or contraceptive methods that are not included here. Analyses of the relationship between contraceptive use and early sexual initiation, puberty, and the characteristics of the individual students or their relationships engaging in early and unprotected intercourse would be particularly valuable. Studies are also required that track contraceptive use into older adolescence and adulthood. Given the breadth of the HBSC network, it will be important to document the extent to which these findings on cross-national patterns in contraceptive use are related to national policy on matters such as access to contraception or sexual health education as well as to rates of teenage pregnancy and STIs.

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