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Original research article

Determinants of risky behaviour of 15-year-old adolescents in relation to early underage sexual initiation in Slovakia

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Abstract
Introduction: The objective of this article is to analyse the determinants of risky behaviour of school children and their impact on early sexual initiation, considering differences between sexes.
Methods: The paper analyses the results of the HBSC international study conducted in Slovakia in 2018. A total of 1,293 schoolchildren (81.8% response rate) participated in the study. 15-year-old adolescents were assessed. Differences between boys and girls were also analysed.
Results: In the 2018 data collection, the occurrence of underage sexual intercourse was more common among boys (17%) than girls (11.3%). Overall, 94.3% of children reported not having smoked and not having had an early sexual experience. Conversely, 26.1% of the children who admitted having smoked, had had sex. As for alcohol consumption, 19.2% of the pupils who had drunk alcohol reported early sexual initiation but, in a statistically significant indicator, up to 34.1% of adolescents who had had sexual intercourse were in a state of drunkenness at the time.
Conclusion: To some extent, experimentation and risky behaviours in adolescence are socially acceptable. However, the timing of adolescents' first sexual intercourse can have an impact on their health and mental well-being. There is a need to recognise and monitor possible determinants that may lead to their risky sexual activities. There is also a clear and pressing need for legislative standards. Paediatric care and nursing play a vital role in the primary prevention of risk activities.

Keywords: Adolescence; First sexual intercourse; Health behaviour in school-aged children; Risky behaviour

Introduction

Sexual initiation is an important transitional step in young people during their adolescence (Madkour et al., 2014). This period is both emotionally sensitive and formative, during which a person develops not only their autonomy and independence, but also employs various forms of socialisations that lead to their self-creation (Kážmér and Csémy, 2019). As a result of this developmental stage, adolescents spend increasingly more time unsupervised; that is without their parents, teachers, and other educators, while creating or deepening their relationships and social bonds with peers and friends based on their interests (Kážmér and Csémy, 2019). The timing of sexual initiation itself can have a major impact on adolescents' health and well-being (Burke, 2018), and subsequently on young adults' sexual behaviour (Pastor et al., 2017). They gradually become aware of their own sexual identity and of romantic affection for people of the opposite and the same sex (Madarasová Gecková et al., 2023). Although adolescence is not an age of dramatic behavioural changes, it is considered a key period for the prevention of risky behaviours, and for creating attitudes and habits associated with risky behaviours (Krejčová, 2011). Regarding risky behaviours, Labáth et al. (2001) consider at-risk youth to be "adolescents, who are more likely to fail socially and psychologically, as a result of multiple factors interaction". Currently, many authors believe that risky behaviour in adolescence is a normative part of both boys' and girls' behaviour at this particular age (Mustagrudič and Marko, 2016). There are socio-structural variables behind the development of adolescents' problem behaviour, such as parents' education, parents' occupation, religion, ideology, family structure, family atmosphere, and peer and media involvement (Šlosár, 2020). Risky sexual behaviour is influenced by social norms and cultural traditions, which are no longer as strict – and thus allow adolescents to engage in their first sexual activities before they marry (Tomašíková, 2010). Differences in social and cultural norms determine the differences in the prevalence of early sexual initiation across countries (Madkour et al., 2014). Risky behaviour syndrome brings partial satisfaction to adolescents in the form of increased self-esteem and better peer communication, which is much more important

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for an adolescent than their future (Foltová Hamanová and Hellerová, 2000). However, risky sexual behaviour is closely linked to an increase in sexually-transmitted diseases (STDs), as confirmed by the World Health Organization (WHO, 2004). Indicators of such behaviour include condom underuse and teenage pregnancy (Currie et al., 2008). Early or premature sexual initiations can cause highly challenging problems; adolescents may not be sufficiently prepared to cope with possible relationship complications or the unwanted consequences of early sexual initiation, such as sexually-transmitted diseases or unwanted pregnancies (Madarasová Gecková et al., 2023). Among the common determinants of risky behaviours (with a correlation to early sexual initiation) is substance use, particularly smoking and drinking alcohol (Pastor et al., 2017).

Alcohol and tobacco are among the first addictive substances used by adolescents (Miertová, 2014). Consuming alcohol during adolescence is associated with differences in brain structure and brain functioning, as well as with various physical and psychological health issues, and other kinds of risky behaviours such as delinquency and risky sexual behaviours (Leal-López, et al., 2020). Adolescents who have consumed excessive alcohol are prone to injuries and violent behaviour, and their actions can lead to various social problems (Madarasová Gecková et al., 2023).

It is important to form control strategies and key prevention principles that focus on comprehensive sex education (Kelčíková et al., 2020), and to identify socio-cultural factors that fundamentally influence the behaviour of individuals (Tomašíková, 2010). There should be a focus on finding alternative solutions to their problems that will boost their self-esteem, reduce anxiety, and enable them to experience healthy social relationships (Foltová Hamanová and Hellerová, 2000). Prevention is preferable to therapeutic or corrective interventions associated with a difficult and costly process, and lengthy or painful procedures (Mazúchová, 2012).

Materials and methods

Design

Health Behaviour in School Aged Children (HBSC) is a cross–international questionnaire study with standardised design that allows for the production of harmonized data sets that facilitate country trend-tracking and cross-national comparisons. So far, four HBSC surveys have been conducted in Slovakia: in the school years 2005/2006, 2009/2010, 2013/2014, and 2017/2018. In the 2017/2018 study, data were collected via anonymous electronic questionnaires containing both mandatory question modules used in each participating country and optional modules containing question sets based on country-specific needs. The study was approved by the Ethics Committee of the Faculty of Medicine of the Pavol Jozef Šafárik University in Košice, and supported by the Ministry of Education, Science, Research and Sport of the Slovak Republic.

Survey

The data sets are created with the HBSC international protocol and with the structure of the educational system of the country. They are stratified by region and school type. The primary unit is typically a class, school, or an individual. Two-phase sampling is used in accordance with a standardised research protocol (HBSC Publications: International Reports, 2020). In the first phase, a random sample of schools is drawn from the Ministry of Education's official list of all schools. The sample is stratified by region (eight municipalities) and school type. In total, 151 schools were recruited due to the need to exceed the sample size. The recruited schools were asked by telephone to agree to participate in the HBSC international study. In the second phase, sets of classes were randomly drawn up within each of the recruited schools, and data collection took place. The representative samples are 11-, 13- and 15-year-old Slovak elementary school and eight-year grammar school students. Participation in the survey was voluntary; the reason for not completing the questionnaire was either pupil or parent refusal. Respondents filled an anonymous standardized questionnaire aimed at the evaluation of adolescents' health-related behaviours.

The age and sex proportions (boys and girls) of the students are displayed in Table 1. The total number (n = 1,293) of responses from 15-year-old adolescents in 2018 was obtained. For the purpose of our study, only the questionnaires ewith the responded questions about sexual initiation (n = 1,058), were relevant. This represents an 81.8% response rate.From these, 505 (45.6%) were girls and 553 (54.4%) were boys.

Data collection

The research was conducted in accordance with ethical guidelines. The data were obtained from the WHO's quadrennial international cross-sectional study on the health of school-age children (HBSC). The original international questionnaire developed for the HBSC study was translated into Slovak in a standardized way. The principals of primary schools and grammar schools gave informed consent for the research. Parents of the students and the students themselves were informed about the research and were given the opportunity to express their agreement or disagreement with their child's involvement. Students were informed about the anonymity of the online questionnaire, which were administrated by a trained administrator without the presence of the teacher. The team of administrators consisted mainly of students from the faculties involved in the project. The anonymity of the provided data was respected when filling and processing the questionnaires. All participants were given full information about the nature and aims of the research and their involvement in the study. Detailed information about the HBSC surveys in Slovakia is provided in the individual research reports (Madarasová Gecková et al., 2019).

Table 1. Age and sex (boys and girls) composition of the sample

	Average age	Boys		Girls			
		N	%	*N*	%	*N*	%
11 years old	11.53 (SD = 0.28)	772	48.6%	815	51.4%	1,587	100%
13 years old	13.5 1 (SD = 0.29)	985	51.4%	927	48.6%	1,909	100%
15 years old	15.39 (SD = 0.24)	703	54.4%	590	45.6%	1,293	100%

Description of variables

Have you ever had sexual intercourse (sometimes this is called "making love", "having sex", or "sleeping with someone!")? Respondents answered yes or no. Only the young people who answered "yes" were included in the analysis.

To investigate risky behaviours, respondents were asked the following questions: On how many days (if any) did you smoke cigarettes? On how many days (if any) did you drink alcohol? Have you ever drunk so much alcohol that you were really drunk? Have you ever used marijuana (pot, ganja, marijuana)? Respondents were given a choice of never, 1–2 days, 3–5 days, 6–9 days, 10–19 days, 20–29 days, and 30 days or more, with a suboption "in their lifetime" or "in the last 30 days". Respondents who indicated the "30 days or more" option were presented in the results.

Have you or your partner used a condom, hormonal contraception, the morning-after pill, or any other method of protection against unwanted pregnancy? Only 15-year-old students who had already had sexual intercourse responded to the above questions. Only those who answered "yes" for the specific method were included in the analysis.

Data analysis

Data were analysed using PSPP statistical software, version 18.0. Descriptive statistics (frequencies and corresponding percentages) were used to report the study characteristics. Chi-square testing was used to assess differences in the prevalence of sexual intercourse between boys and girls, as well as the significant interaction of other variables. The reference group was 15-year-old school children of both sexes (boys and girls).

Results

We investigated how many schoolchildren have already had sexual intercourse. Of the 15-year-old school children surveyed (n = 1,058), 14.3% of male and female respondents reported having had sexual intercourse. A comparison of the prevalence of sexual intercourse experience in boys and girls (Table 2) showed a statistically significant difference: boys reported more experience of sexual intercourse (17.0%) than girls (11.3%) at age 15 years (p = 0.008).

Table 2. Sex-based (boys and girls) differences in the prevalence of sexual intercourse

		Prevalence of sexual intercourse		
		yes	no	Total
Boys	*N* (%)	94 (17.0%)	459 (83.0%)	553 (100%)
Girls	*N* (%)	57 (11.3%)	448 (88.7%)	505
Total	*N* (%)	151 (14.3%)	907 (85.7%)	1,058 (100%)
Chi-square test value: 7.036; df = 1; p = 0.008				

We also investigated the correlation between substance use and the prevalence of sexual intercourse. As shown in Table 3, respondents who reported having smoked during their lifetime were also more likely to have experience of sexual intercourse than respondents who did not. "Smoking yes" in Table 3 means that the respondent has smoked in the past or currently smokes, and "smoking no" means that the respondent has not smoked cigarettes.

As for alcohol consumption comparison, there was a statistically significant differencein prevalence of sexual experience in respondents who reported having drunk alcohol in their lifetime to those, who did not Respondents who reported drinking alcohol in their lifetime were also more likely to have had sexual intercourse than respondents who did not (Table 3). Similarly, there was a statistically significant correlation between the experience of drunkenness and the prevalence of premature sexual intercourse. Respondents who reported being drunk in their lifetime also had a higher rate of experience

Table 3. Differences in the prevalence of sexual intercourse based on substance use

		Prevalence of sexual intercourse		
		yes	no	Total
Smoking yes	*N* (%)	107 (26.5%)	297 (73.5%)	404 (100%)
Smoking no	*N* (%)	36 (5.7%)	597 (94.3%)	633 (100%)
Total	*N* (%)	143 (13.8%)	894 (86.2%)	1,037 (100%)
Chi-square test value: 89.729; df = 1; p = 0.001				
Alcohol no	*N* (%)	25 (6.0%)	392 (94.0%)	417 (100%)
Alcohol yes	*N* (%)	118 (19.2%)	497 (80.8%)	615 (100%)
Total	*N* (%)	143 (13.9%)	889 (86.1%)	1,032 (100%)
Chi-square test value: 36.229; df = 1; p = 0.001				
Drunkenness no	*N* (%)	66 (8.1%)	749 (91.9%)	815 (100%)
Drunkenness yes	*N* (%)	78 (34.1%)	151 (65.9%)	229 (100%)
Total	*N* (%)	144 (13.8%)	900 (86.2%)	1,044 (100%)
Chi-square test value: 101.344; df = 1; p = 0.001				
Cannabis no	*N* (%)	93 (9.1%)	830 (90.9%)	913 (100%)
Cannabis yes	*N* (%)	66 (48.5%)	70 (51.5%)	136 (100%)
Total	*N* (%)	149 (14.2%)	900 (85.8%)	1,049 (100%)
Chi-square test value: 151.077; df = 1; p = 0.001				

of sexual intercourse compared to respondents who did not (Table 3).

A comparison of the prevalence of experience of sexual intercourse in respondents who reported using cannabis in their lifetime versus those who did not, showed a statistically significant difference. Respondents who reported using cannabis in their lifetime also had more experience with sexual intercourse than those who did not (Table 3).

The determinant of risky behaviour is unprotected sexual intercourse. In our research sample, we were interested in the most commonly-used contraceptive methods to protect against unwanted pregnancy. Table 4 shows that condom use is the most frequently used contraceptive method among 15-year-olds who reported having sexual intercourse. Respondents could combine multiple response categories for this question.

Table 4. The most frequent protective methods for avoiding unwanted pregnancy

	N (%)	*N* (%)	*N* (%)	*N* (%)
	Condom	Birth-control pills	Morning after pill	Other methods
Yes	90 (65.2%)	20 (15.4%)	17 (13.4%)	9 (7.7%)
No	40 (29.0%)	90 (69.2%)	90 (70.9%)	84 (71.8%)
I don't know	8 (5.8%)	20 (15.4%)	20 (15.7%)	24 (20.5%)
Total	138 (100%)	130 (100%)	127 (100%)	117 (100%)
Missing system	1,155	1,163	1,166	1,176
Total for the project	1,293	1,293	1,293	1,293

Discussion

In this study, we wanted to specify the determinants of schoolchildren's risky behaviours that influence their early sexual initiation and sex differences. The results of our analyses show an increasing trend in sexual experience among adolescents compared to previous studies in 2006 and 2010. On the other hand, when compared to 2014, there is a decrease of less than a two percent in early sexual initiation. (Madarasová Gecková et al., 2019). In the 2018 collection, underage sexual intercourse was more common among boys (17%) than girls (11.3%). Our findings are consistent with those of the international HBSC study, which reported a lower proportion of sexually-experienced individuals among adolescents aged 14 and 15 years in Central European countries (Hungary, Czech Republic, Croatia, Poland) compared to adolescents from Western or Northern European countries (Kalina et al., 2009). The research findings of Czech authors partially correspond to our survey, but among Czech schoolchildren, the incidence of underage sexual experience is higher among girls (19%) than boys (16%). Data from our most recent collection in 2022 suggest a stagnant trend for boys (16%) and a slight decline for girls (9%) compared to our 2018 survey (Madarasová Gecková et al., 2023). The timing of first sexual intercourse in adolescents can affect their health and mental well-being (Madkour et al., 2014). There is a need to recognise and monitor possible determinants that may lead to their risky sexual activities. In our research inquiry, we assumed that adolescents prone to risky behaviours such as substance use, alcohol consumption, and smoking, would be less reluctant to engage in sexual intercourse for the first timefirst sexual intercourse. This assumption is further supported by the study of Oshri et al. (2012), which suggests that these factors become more important than the inhibiting stimuli which discourage unprotected intercourse. The risks associated with early sexual initiation, such as unwanted pregnancy or sexually transmitted diseases, are well known, but the psychological consequences are much greater (Godeau et al., 2008). The findings of our analysis indicate that, in the prevention of early sexual activity, protection from unwanted pregnancy and prevention of sexually transmitted diseases, education of adolescents could potentially reduce the negative impact of sexual relationships at a young age.

Our study findings align with prior research; adolescents who engage in smoking, alcohol consumption, drunkenness, or cannabis use are more likely to have experienced early sexual initiation at a young age. Epidemiological data from Slovakia and several other countries confirm the increase in popularity of non-traditional forms of tobacco and non-tobacco nicotine-containing products – and this is becoming a public health problem among adolescents (Bašková et al., 2022). According to the World Health Organization, Slovakia ranks among the countries with a higher prevalence of smoking (Madarasová Gecková et al., 2023). In terms of the variables selected, it is statistically significant that children who reported not having smoked (94.3%) had not had an early sexual experience, while 26.1% of those who reported having smoked had had sex. As for alcohol consumption, 19.2% of all young people who admitted using alcohol had experienced early sexual initiation. However, in a statistically significant indicator, up to 34.1% of adolescents who had had sexual intercourse were in a state of drunkenness at the time. Despite a significant decrease in adolescents' alcohol consumption in European countries as well as the USA (Leal-López et al., 2020), the prevalence remains higher than is desired, because it has a negative impact on adolescent development and their future health. This trend is greatly facilitated by WHO tobacco control strategies (Madarasová Gecková et al., 2023). Conversely, the findings of the study by Kalina et al. (2009) did not show persistent perceptions that adolescents would more likely engage in sexual risk-taking when being intoxicated than when being sober. Instead, the young people tend to follow their condom use habits, regardless of alcohol use. Findings from Irish researchers (Young et al., 2018) show that early sexual initiation in boys was predicted not only by smoking, alcohol, and cannabis use, but also by living in poverty and interacting with friends. For girls, there was a correlation between sexual initiation and bullying. Our findings indicate a noticeable connection between cannabis use and first sexual experience at a young age. A little under 49% of pupils who admitted previous cannabis use also reported having sex. The authors, Baška and

Kolarčík (2009), present findings from the HBSC study that up to 15% of girls and 21% of boys have tried cannabis. While their findings do not suggest a clear link between early sexual experience and cannabis use, we could assume, based on common knowledge, that there is a correlation between the two. This idea is reinforced by our study, which shows a fourfold rise in sexual intercourse in children who have tried cannabis compared to those who have not. Long-term cannabis use leads to detrimental social and health impacts in adolescents (Madarasová Gecková et al., 2023). Involment of healthcare professionals in educational programmes could be beneficial for the prevention of risky behaviours in adolescents. Moreover, educating young people about the effects of risky behaviours on their health will unquestionably promote healthy lifestyles in schools.We also monitored safe sexual behaviour in adolescents. The majority of those who had an underage sexual experience used a condom (65.2%). The second preference was the morning-after pill (17%), and then hormonal contraception (15.4%). There are certain limitations to our study as the morning-after pill can be difficult to obtain, and adolescents cannot easily access it at the time of sexual contact. The most accessible method of protection is the condom, which protects from sexually-transmitted diseases and unwanted pregnancies. Its easy availability without a prescription and its low cost are the reasons why this method is the most widely used (Kelčíková et al., 2020). Kolarčík et al. (2009) worked with approximately the same sample. Their findings indicated that 11% of girls and 13% of boys reported having sexual experience. Among these, about two-thirds reported using a condom as their contraceptive method. In the 2022 collection, a condom was the most common contraceptive method, used by 45% of boys and 41% of girls. Birth control pills were used by 19% of boys and 5% of girls (Madarasová Gecková et al., 2023). In the study by Kelcik et al. (2020), hormonal contraception was chosen by 7.63% of girls, mainly for the health benefits not associated with contraception. Findings from several studies, as well as survey findings, suggest that comprehensive sex education should be available to adolescents before they first have sex. Social media allows easier access to information and images with sexual behaviour, but does not provide comprehensive information on protection from unwanted pregnancies and STDs (Kőlto et al., 2020).

Several empirically validated approaches highlight the importance and relevance of early adolescent experiences and their impact on later development. Experimentation and risk-taking behaviour during this period is somewhat socially acceptable. Adolescents may perceive some benefits in such behaviour, viewing it as a way to navigate the challenges of this period of their lives (Banárová and Čerešník, 2019).

Conclusion

As part of preventive care, recognition and identification of risk factors that influence early sexual behaviour in adolescents, appears to be essential. Specifying these determinants and dividing them into influential and non-influential factors contributes to the development of purposeful preventive nursing practice programs for adolescents. The results indicate that it is very important to pay attention to educating children in the field of sexual life, as well as their physical and psychological health. Thus we cannot forget the importance of training teachers, nurses, and midwives in the issue of sex education. The main aim is to promote appropriate health-related behaviour.

The World Health Organization (WHO), given the prevalence of alcohol consumption, set a goal of reducing alcohol consumption by 10% by 2025. Besides being one of nine global targets for NCDs, it is a very effective tool to lower adverse effects on this age group. Therefore, it is necessary to involve countries in this effort through their national-level measures and policy interventions. Nursing, especially paediatric nursing, plays a significant role in primary prevention by promoting positive health behaviours and addressing risky behaviours. Nurse, within the legislative framework of the Slovak Republic, and within the scope of their competences, can play a valuable role in screening smoking, substance use, and safe sexual education activities. Their contribution in the implementation of preventive interventions and the preparation of sex education programmes might be useful.

Ethical aspects

The research was conducted in accordance with ethical guidelines. The principals of primary schools and grammar schools gave informed consent. Parents of the students and the students themselves were informed about the research and were given the opportunity to express their agreement or disagreement with their child's involvement in the research. Students were informed that the online questionnaires were anonymous; these were administered by a trained researcher in the absence of a teacher. All participants were fully informed about the nature and aims of the research and their involvement in the study.

Conflict of interest

The authors have no conflict of interest to declare.

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